

SOCIALLY MEDIATED CONVERSATIONS AND HEALTH DECISIONS

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by

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SOCIALLY MEDIATED CONVERSATIONS AND HEALTH DECISIONS

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Conversation and other social interactions pattern our waking lives. Research and personal experience tells us that these interactions offer numerous benefits that include social support and our ability to regulate and make sense of our emotions (Burleson & Goldsmith, 1998; Burnard, 2003; Cohen, 2004; Duck, Rutt, Hoy, & Strejc, 1991). Conversation is also consequential for what we believe and how we behave with respect to our personal health behaviors and lifestyle in general (Southwell & Yzer, 2007; van den Putte, Yzer, Southwell, de Bruijn, & Willemsen, 2011).

Two streams of research have emerged examining how conversation about health matters for what we believe and how we behave. One strand of research has examined how individuals discuss health messages they receive from the media in such campaign contexts as smoking cessation (Dunlop, Wakefield, & Kashima, 2008b; Hafstad, Aarø, & Langmark, 1996), family planning (Boulay, Storey, & Sood, 2002; Frank et al., 2012; Rutenberg & Watkins, 1997), and drug avoidance (David, Cappella, & Fishbein, 2006). Another strand of research has examined casual, everyday conversations and how these discussions relate to beliefs about the health topics discussed (Ferrara, Kopfman, Hall, Navon, & Septor, 2011; Miller-Day & Kam, 2010). Despite growing interest in these areas of health and conversation, research on post-campaign discussion has been largely observational, and measures of health-related conversation have been simplistic.

This dissertation addresses these gaps with two studies. I begin with a review of literature relevant to both studies in Chapter 1. Chapter 2 describes results from a 2-phase

study that employs both qualitative and quantitative methods to understand how different types of post-health campaign message conversation shapes intentions to engage in healthy sleep behavior. Chapter 3 describes results from a secondary analysis, using the same dataset as Chapter 2, to explore everyday conversations about sleep and their connections to beliefs about the challenges and benefits of healthy sleep. This dissertation draws on the Integrated Model of Behavioral Prediction (IMBP; Fishbein & Azjen, 2009) to understand connections between campaign generated or everyday conversation and beliefs about the topic of sleep. This dissertation also focuses on sleep among college students as its behavioral context. With ample evidence that sleep is dramatically reduced and more erratic in college (Maas, Robbins, Fortgang, & Driscoll, 2011; Robbins & Niederdeppe, 2014), designing interventions to promote this health protective behavior may do service to promoting health at this important developmental stage.

Overall, findings from this dissertation indicate that the valence and topic of sleep-related conversation, both after media exposure and more generally, are related to beliefs and intentions to engage in healthy sleep behavior. Chapter 2 reveals that positively-valenced conversations about a sleep promotion message led to greater intentions to engage in healthy sleep behavior than did negatively-valenced conversations. Chapter 3 reveals that the topic of sleep comes up frequently in everyday discussions and that talking about unhealthy topics may be undesirable for future good health decision-making. In an age where health promotion efforts are increasingly delivered and disseminated in online media environments like Facebook and Twitter, exploring how messages and information are socially-shared holds promise for advancing population health in an increasingly information-rich environment.

DEDICATION

I wish to dedicate this dissertation to my longtime mentor, colleague, and friend, Dr. Jim Maas for inspiring me to get a doctoral degree and being a tremendous source of support and inspiration on this long road. You have inspired me in more ways than you know, Jim, and I will be forever grateful for challenging me to measure my accomplishment by the magnitude of positive impact on the lives of others.

BIOGRAPHICAL SKETCH

Rebecca Robbins was born in Connecticut. After starting a small, but successful catering business in High School, she attended the Cornell University School of Hotel Administration for her Bachelor degree. As an undergraduate at Cornell, Rebecca conducted research and served as a teaching assistant to Introductory Psychology at Cornell for Dr. James Maas. After graduation, Rebecca joined the teaching staff at the Weill Cornell Medical College in Doha, Qatar where she assisted the teaching of Dr. Maas' Psychology to pre-medical students. A long-time interest in health, and growing interest in academia drew Rebecca to Cornell for graduate school where she has been guided and mentored by Dr. Jeff Niederdeppe in pursuit of her Ph.D. in health communication.

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CHAPTER 1

INTRODUCTION

The people in our environments can influence our cognitions, decisions, and behaviors in a variety of contexts (Asch, 1951; Moscovici, Sherrard, & Heinz, 1976). When it comes to health, social ties can be positive source of influence, but they can also be detrimental to healthy decisions and behaviors. For example, social network research has found happiness can spread through social networks, but so too can poor sleep or nutrition habits (Christakis & Fowler, 2007; Fowler & Christakis, 2008; Mednick, Christakis, & Fowler, 2010). While there are many forms of social influence (like observing the behavior of others in our environment), the conversations we have with others also have potential to influence our opinions and guide our behaviors.

The role of conversation in shaping behavior has recently garnered attention in health research (Real & Rimal, 2007; Southwell & Yzer, 2007). Some studies in this realm have examined everyday talk on various subjects and its implications for the behavior discussed, such as parents talking to their kids about drinking or college students talking about sex (Holman & Sillars, 2012; Miller-Day & Kam, 2010). Another area of the literature has examined how conversation after exposure to a health campaign message bears consequence for beliefs about the behavior discussed in the message (Dunlop, Wakefield, & Kashima, 2008b; Hendriks, Van den Putte, & de Bruijn, 2013; Wakefield, Loken, & Hornik, 2010). Research to date at the nexus of campaigns and conversations has largely drawn upon cross-sectional approaches measuring conversation that follows exposure to health media, precluding definitive statements about the causal ordering of relationships between conversation after receiving such messages and health-related behavior.

Despite growing interest in both casual everyday discussion and talk that is generated by a campaign, the measures relied on by the field have tended to use simplistic indicators of an otherwise complex process, simply asking respondents to rate whether or not they talked about the topic or campaign. Yet, talk is a fundamentally dynamic social behavior. Conversations can cover a variety of topics in any number of ways (Burlinson, Berger, Roloff, & Roskos-Ewoldsen, 2010a; Kellermann, 1992; Searle, Parret, & Verschueren, 1992). While entire sub-fields like political communication and interpersonal communication have devised robust means for understanding conversation, conceptual and methodological approaches in health communication vary from one study to the next and often rely on simplistic measures of frequency alone. Numerous other literatures remind us that conversations have many dimensions, such as topics, tone, and conversation partner, so simple measures of frequency are likely inadequate to capture the full range of conversation impact.

Perhaps the richest body of work on conversation in health communication is that addressing talk in the context of health campaigns. This work suggests that talking to others is a common response to receipt of health promotion message or campaign materials. Early work in the area of conversation and campaigns found that recipients of family planning materials were likely to discuss the information with others (Boulay et al., 2002; Rutenberg & Watkins, 1997). More recently, research has offered evidence that discussion among adults following anti-smoking messages were positively related to intentions to quit (Dunlop et al., 2008). Other work has found conversation following anti-binge drinking videos to be positively associated with behavioral intentions to reduce binge drinking among college populations (Hendriks et al., 2013). Research, however, also has found that some young people who engaged in talk after viewing an anti-drug message held stronger pro-drug cognitions that ran counter to the

campaign's intended message (David et al., 2006). Although some conversation has been found to support healthy cognitions and behaviors, other types of conversation appear likely to hinder persuasive message or campaign attempts to promote healthy behavior. Thus, the accumulated findings to date make clear that conversation is a common response to health message or campaign exposure, yet we still have a fairly limited understanding of the conditions under which this talk impacts intended behavioral outcomes for better or worse.

This dissertation addresses these gaps by examining (a) how conversation after exposure to a health promotion message shapes its impact on health behavior, and (b) how more general conversation about a health-related topic may influence health-related cognitions and behavioral intentions. I examine the impact of campaign-induced conversation using a randomized experiment to permit strong causal inference in a unique context: healthy sleep among college students. This research includes two phases. First, I use qualitative research to identify common aspects of sleep-related conversations that college students engage in on an everyday basis. Next, I use a between-subjects randomized experimental design to examine how different types of conversation after receiving a sleep promotional message shape health message impact. I utilize behavior prediction theory, the Integrated Model of Behavioral Prediction (IMBP; Fishbein & Ajzen, 2009), to understand how conversation may influence behavioral beliefs and intentions to get healthy sleep.

In the sections that follow, I (1) review literature on everyday conversation and health behaviors, (2) describe parallel work that examines conversation in the context of health communication campaigns, and (3) describe the research I conducted. Ultimately, this research seeks to improve our ability to understand the impact of risk communication messages designed

to promote healthy sleep behavior in college by examining the conditions under which conversations may shape that impact.

Conversations and Health Behavior

Behavior can stem from a variety of sources. Classic theory on behavior argues social influences (more specifically, social norms) are useful in determining if a behavior is – or is not – being performed (Ajzen & Fishbein, 1980). Norms are our perceptions about what others are doing, and or what they view as appropriate (Cialdini, 2001). Human beings have a fundamental need to belong to social groups (Baumeister & Leary, 1995). It is only by acknowledging customary and socially acceptable actions and routines that we have the best shot of just that – satisfying our need to *belong* and be accepted by others.

Our daily lives are ripe with opportunities to collect and make sense of social cues. For instance, schools, workplaces, and a variety of other public spaces offer ample opportunity to understand norms by observing others, and talking to social actors in our environments. Scholars argue that social norms develop in social settings like these through one of two ways: observations of others or conversations with others (Hogg & Reid, 2006). Human life affords many opportunities for collecting valuable social information, and once formed – although ever evolving – these perceptions guide our individual beliefs and cognitions.

Conversation is one way normative cues are collected. Research suggests that conversation is one particularly persuasive way individuals learn about others habits, ideas, opinions, and preferences, and develop their perceptions about what is normative (Kincaid, 2004; Yanovitzky & Stryker, 2001). There is also evidence that if high-risk behaviors or undesirable outcomes are discussed, individuals are more likely to believe they are personally susceptible to the risk (Tyler, 1984). In addition, talking about ways to avoid high-risk behaviors has been

linked to beliefs in one's self-efficacy for avoiding a certain threat (Rogers, 1975). Taken together, this evidence suggests that talk contributes to perceptions of social norms, but the evidence also makes the case that conversation truly matters for individual beliefs. At the same time, an important question in understanding conversation outcomes is not simply whether or not issues are discussed, but how they are discussed.

Health-related conversations and their outcomes have received increased attention from public health and health communication researchers in recent years. Some studies have examined the content and consequences of everyday, informal conversations, while other studies have considered how conversation generated by a health campaign might impact the persuasive power of the message or intervention (Southwell & Yzer, 2007). Research examining conversation in health campaigns has found some conversation can help persuasive efforts, while other conversation can cripple these attempts (David et al., 2006; Dunlop et al., 2008; Hendriks et al., 2013). Although there is growing attention to conversation in health campaigns, we lack a robust evidence base to determine and predict the conditions under which conversation – either everyday discussion or campaign-generated talk – supports or hinders healthy decision-making.

One reason for a lack of clarity in this body of research may have to do with the methods used to measure conversation. There is growing attention to the limitations of existing methods and measurement tools for understanding the role of talk in health-related message exposure and persuasion. Several studies argue that measures used to assess conversation in health research have tended to be simplistic (Frank et al., 2010; Hendriks, de Bruijn, & van den Putte, 2012; Southwell & Yzer, 2009). Conversation is a process of social interaction where people talk about any number of topics in any number of ways (Fiske & Taylor, 2013), but is often measured with reductive measures that inquire only if conversation occurred. Only recently has the reliance on

simplistic measures begun to change and more comprehensive conceptualizations of conversation emerge.

Recently, scholars have advanced a construct for better understanding conversations about health, either that follow a campaign or take place in informal, everyday contexts. Specifically, scholars argue we might understand conversation through the lens of a construct called “valence” (Southwell & Yzer, 2009). This concept distinguishes between “positive” (e.g., talk about a health message or topic in a way that is constructive to healthy behavior) and “negative” conversation (e.g., talk about a health message or topic that is not constructive to healthy behavior). The concept of conversational valence engages centrally with the idea that while some talk might be useful in health persuasion, it might be the case that not all conversation is good for supporting health behavior.

Research examining conversation valence in the context of health campaigns to date has largely been observational. Specifically, conversation has been allowed to follow naturally after a campaign, and then documented as either positive or negative in nature. Missing from the literature is research that examines conversation effects, using methods that clearly establish causal order and rule out alternative explanations, on campaign-targeted health behaviors. This dissertation fills these gaps, and seeks to achieve two broad aims. First, this dissertation uses a randomized experiment where a confederate engages in positively-, negatively-valenced, or natural conversation with participants and assesses the impact of these conversations on health beliefs and behavioral intentions. Second, in a secondary analysis using data from the same study, this dissertation explores connections between different types of everyday discussion about sleep and sleep-related cognitions about sleep among college students.

Conversations and Health Behavior among College Students

While social influence is important for all segments of the population, there may be one that is particularly swayed by social factors. Evidence suggests that teenage, but particularly college student populations, are particularly susceptible to peer pressure and more attuned to social influences than other segments of the population (Dielman, Campanelli, Shope, & Butchart, 1987). College students are also enmeshed in rich communication networks across multiple modalities, ranging from face-to-face interactions (in class, social settings, and housing) to online social networking to mobile phone-based communication (Lenhart, 2009).

Social interaction is not only frequent, but also particularly consequential during the teenage and college years. For example, one study examining multiple predictors of alcohol and drug abuse among a large sample of teenagers in the United Kingdom found social influence and perceptions of peer behavior to be the single strongest contributors to risky behaviors (Brooks, Magnusson, Spencer, & Morgan, 2012). In another social network study, a different set of researchers found lethal behaviors among college-aged individuals such as injection drug use to be explained largely by social influence factors, and specifically through social support and regulation provided by social ties that also were using (Lakon, Ennett, & Norton, 2006). Yet another study found that normative social influence – or the pressure applied by referent peer groups to behave in a certain way – significantly predicted tobacco use among teenagers, even under conditions where information about the negative consequences of drug use was widely available (Sussman, 1989). In summary, it is clear that various forms of social influence are a significant predictor of health-related behavior during the teenage and college years, with consequences for what youth believe and how they behave. Analyzing the content and impact of conversations among college students may be one way to better understand these factors.

This evidence illustrates the strong impact young people can exert on one another. The constellation of behaviors social influence predicts among teenagers is, by and large, unhealthy, high-risk, and in some cases even lethal. Effective approaches in public health that identify and modify risk factors inherent to the teenage years, such as social influence, will go a long way to increasing the likelihood of young people developing into healthy adults and productive members of society (Brooks et al., 2012; Reyna & Farley, 2006).

Much research on social influence is principally concerned with the effect of influence, as opposed to understanding its causes and mechanisms. While observation is a clear, straightforward way individuals collect social cues, conversation may be one additional process by which individuals collect valuable social information that may be consequential for their beliefs and behaviors. In other words, conversation may be a social process that bears influence for individual health decision-making and illustrative for understanding social influences and the processes by which it is exerted. In the chapters that follow, I offer additional evidence for the critical influence social factors present on individual behavior during the teenage and college years, in addition to research on the consequential nature of conversation.

Brief Overview of the Dissertation

The primary objective of this dissertation is to refine our understanding of how talking about a sleep promotional message shapes college student intentions to engage in healthy sleep behavior. A secondary objective is to enhance our ability to understand how everyday conversations about sleep may be consequential by validating measures of sleep-related talk.

To accomplish these objectives, one study was conducted that included focus groups and a follow up closed-ended surveys. Focus group objectives were conducted to serve two objectives, specifically, collecting (1) salient reactions to a video on the importance of health

sleep (for use in Phase 1 Chapter 2) and (2) responses about everyday conversation topics about sleep and partners (for use in Phase 1 Chapter 3). The focus groups were used to inform closed ended questionnaire items. The closed ended survey had two specific aims, including (1) the relationship among confederate-induced conversation valence and sleep-related beliefs after watching the sleep promotional video (Phase 2 Chapter 2) and (2) the relationship among behavioral beliefs about sleep and everyday sleep-related conversations (Phase 2 Chapter 3). Chapter 2 of this dissertation will include a randomized experiment where participants are assigned to conditions where they watch a sleep-related video and are assigned to follow the link to a post-exposure survey, or engage in online, socially mediated conversation with a confederate trained to sway the conversation to be natural, positive, or negative. Chapter 2 research objectives are to (1) analyze the type of conversation that emerges in response to a sleep promotion messages, (2) examine whether purposeful efforts can shape the nature of sleep-related conversations, and (3) test the impact of confederate-natural, confederate-positive, and confederate-negative conversations on the impact of messages targeting sleep-related cognitions and behavior. Figure 1.1 offers a visual depiction of these research formats:

Figure 1.1
Research Objectives by Phase Across the Dissertation Chapters to Follow.

	<i>Chapter 2</i>	<i>Chapter 3</i>
Phase 1 Focus Groups	Reactions to the sleep promotional video message.	Everyday conversation topics about sleep, and conversation partners.
Phase 2 Closed Ended Survey	Experimentally induced conversation and sleep-related beliefs.	Everyday conversation about sleep and sleep-related beliefs.

The primary study reported in this dissertation also collected feedback from participants on their typical sleep-related conversations. In Chapter 3, I also use these responses to explore the nature of these sleep-related conversations and assess whether closed-ended measures of these conversations predict sleep-related beliefs as predicted by the Integrative Model of Behavior Prediction (Fishbein & Azjen, 2009;). In doing so, I seek to offer evidence that the methods applied here are valid ways to gauge the frequency, topic, and social context of sleep-related conversations and thus useful for future work.

This dissertation uses a randomized experimental design to test the impact of confederate-positive, confederate-negative, and confederate-natural post-message conversations. I use both self-reported conversational valence and content analysis of the chat transcripts to identify perceived and actual conversation valence. I also make use of the extended, post-conversation survey instrument to validate self-reported measures of everyday sleep-related conversation. Without valid measures of health-related conversation, we cannot hope to fully understand their connection to media effects and everyday health decisions.

CHAPTER 2

CAUSAL EVIDENCE FOR THE IMPACT OF POSITIVE AND NEGATIVE CONVERSATION FOLLOWING EXPOSURE TO SLEEP PROMOTIONAL MESSAGES AMONG COLLEGE STUDENTS

Conversation patterns our waking lives and often covers topics relating to health. Conversation is an opportunity for individuals to exchange personal experiences and opinions about various health topics and behaviors. There is growing evidence that conversation may be one form of social influence that is particularly consequential for health belief formation, and ultimately health behavior.

Early theory argued that conversation plays an important role in media effects. Long ago it was argued that without conversation, media would have no influence (Tarde, 1898). The importance of social sharing has received empirical support from subsequent seminal works. In early studies evaluating voting behavior, strategic attempts to sway voters were found to have limited to null effects (Lazarsfeld, Berelson, & Gaudet, 1944). Upon closer evaluation, however, Lazarsfeld and colleagues found social conversations about the campaign were at work in halting the flow of information and may have been to blame for the limited effects observed in their research. From this, a theoretical perspective called the Two-Step Flow Hypothesis was born (Katz & Lazarsfeld, 1955), which argued that media effects may be more fully understood if we account for how information is talked about during or after initial message exposure.

The propositions outlined in the Two-Step Flow Hypothesis are quite simple and straightforward. This paradigm argues two constructs are critical to understand and measure in media-based persuasion: selectivity and interpersonal relations. Selectivity is important because individuals cherry-pick information from the media based on our preferences, education and

personal experience are key considerations in understanding what people focus on (Tichenor, Donohue, & Olien, 1970). Interpersonal relations are also important because the way people talk about topics and intentions exerts influence on individual behavior (Lazarsfeld et al., 1944). According to the Two-Step Flow, whether topics are personally relevant and whether information received from the media is discussed goes a long way toward understanding media-based persuasion. Two-Step Flow represents one of the earliest models to address social factors like conversation in media effects, and set the stages for others to follow.

Media effects research in the decades that followed the Two-Step Flow hypothesis paid relatively little attention to the role of conversation in shaping media effects. This has begun to change, however, in recent years. A variety of authors have called for including measures of conversation about messages in health campaign and message evaluation efforts (Hornik, 2002; Southwell & Yzer, 2009; van den Putte et al., 2011). One such example comes from the evaluation of the US National Youth Anti-Drug Campaign. In analyzing the outcomes of this large-scale media campaign, researchers did not observe significant changes in attitudes as a result of the campaign, and in fact some evidence suggested counter-productive effects on increasing intentions to try marijuana. The authors did find that young people often talked about the topics of the campaign (Hornik, Jacobsohn, Orwin, Piesse, & Kalton, 2008). With these evaluation efforts also came theorizing on how to understand campaign outcomes (Hornik & Yanovitzky, 2003). In their theoretical framework, Hornik and Yanovitzky argued that social diffusion – the way messages are exchanged with family, peers, and others – is a critical variable to consider in understanding when exposure to a campaign message is able to change behavioral beliefs or intentions. If the message is discussed positively, delayed learning is likely to be constructive to the message. On the other hand, if conversation treats the message or topic

negatively, the outcome is likely to be destructive to persuasion. Magnitude and direction of effects may not be accurate without considering the valuable social process, social interchange and conversation.

Conversation and Health Campaigns

Health campaigns are one tool for advancing population health. Research on health communication campaigns is a vibrant area of the literature in health promotion and communication. Campaigns have been designed to target a variety of positive health ends, including quitting smoking and drug use (Farrelly et al., 2012; Niederdeppe, Farrelly, & Haviland, 2004), promoting physical activity (COMMIT, 1995), and promoting safer sex practices (Paek, Lee, Salmon, & Witte, 2008).

Some campaigns succeed, while others achieve only modest gains in promoting healthy behavior (Noar, Carlyle, & Cole, 2006). Still others may backfire. Consider, for instance, the US National Youth Anti-Drug Media Campaign. This large, multi-million dollar campaign targeted prevention of drug use among teenagers in the US. Despite the millions of dollars invested in this large-scale media-based campaign, only small changes in beliefs were documented and only in a few cities (Hornik et al., 2008; Palmgreen, Donohew, Lorch, Hoyle, & Stephenson, 2001). Some evidence suggested that the campaign was counter-productive, increasing intentions to try marijuana among some groups (Hornik et al., 2008). This evidence suggests, despite the best-laid plans, some campaigns succeed, some fail, and others may even do more harm than good.

Changing behavior with a campaign often hinges on the campaign's success at changing beliefs and attitudes about a behavior (Atkin & Freimuth, 2012). Much attention in health promotion has been devoted to the design and cognitive processing of the message itself, with less attention paid to the possible role of conversation in shaping the impact of health campaigns.

Human beings are fundamentally social animals, and focusing exclusively on cognitive effects of campaign messages ignores interpersonal processes that may shape the direction and magnitude of media effects. Increased attention to the role conversations play in shaping health message and campaign effects may help illustrate why some campaigns succeed, why others fail, and why some even backfire. Yet efforts to conceptualize the interpersonal processes like conversation during or after message exposure have been limited. We also know little about the success of efforts to shape the nature of these conversations. Our ability to design interventions that positively impact health decision-making is limited by our ability to comprehensively understand their effects.

There is growing attention in campaign evaluation research to how tangible social influences (like conversations with others) bear consequence for message effects (Dunlop et al., 2008; Frank et al., 2012; Southwell & Yzer, 2009; van den Putte et al., 2011). Two early studies conceptualized conversation as an unintended outcome of message exposure, yet an outcome that was beneficial to the campaign. In both studies, the focus of the campaign was promoting family planning in developing countries and each found recipients of these messages consistently discussed the message with others in their social surroundings (Boulay et al., 2002; Rutenberg & Watkins, 1997). Although not explicitly endeavoring to promote conversation, these studies found message recipients were likely to talk to others about the information they received, and in so doing actually spread the message beyond than those who originally received it.

In one recent study evaluating a campaign whose target was to promote social norms about safe sex and condom use in India, researchers specifically measured post-exposure conversation. In this research, researchers were interested to consider whether personal susceptibility to sexually transmitted diseases (e.g., single males versus married) predicted their

likelihood of discussing the message (Frank et al., 2012). Researchers also measured conversation valence, distinguishing between positive (good for the campaign) and negative (bad for the campaign) conversation. Although Frank and colleagues found no difference in likelihood of discussing the campaign message by risk factor, conversation valence did predict behavioral beliefs about condom use and behavioral intentions to use condoms.

The way a message is talked about may be a missing piece to campaign evaluation efforts. Research on the role of conversation in health campaigns has taken many forms, but may well be described as studies that have (1) identified important social actors, then relied on them to spread a message through conversation, (2) explored messages forms likely to be shared in conversation, and/or (3) examined talk following campaign exposure.

Individuals Can Spread a Health Message through Conversation

Some research in health campaigns and conversations has explicitly tested if campaign materials can be designed to elicit conversation. These studies draw on the notion that information received from a peer or valuable social connection may carry more significance and persuasive potential than that received from the media. Several approaches to eliciting conversation include methods that train influential social actors in a community to disseminate a message, design a message with the highest likelihood to promote conversation about the message, or ask participants in the context of a laboratory study itself to talk to one another.

Several public health studies have relied on socially influential individuals to promote a health message through conversation. This approach draws upon social network analysis (SNA) and theory on how to identify highly connected individuals, and then the role these groups play in persuading others in their social environment, particularly when it comes to health (Sorensen et al., 2003; Valente, 2010). For example, one study found that that identifying influential gay

males, and motivating them to share a public health message within their networks could actually yield significant positive behavior change when the intervention city was compared to the control (Kelly et al., 1991) When conversations about health can be motivated among existing social network channels, public health messages may be found to spread efficiently, and behavior change naturally follow the receipt of this message.

Other research that has explicitly promoted conversation has made talk a central goal of the campaign. This is an common approach seen in safe sexual behavior promotion is a message that includes information and the simple conversation direction, asking recipients to talk to their partner about sex and sexual health. One study examined precisely such a message urging teens to “Talk to your partner” about their sexual history and about condom use (Kennedy, Mizuno, Seals, Myllyluoma, & Weeks-Norton, 2000). Kennedy and colleagues found their approach of joining social efforts (“Talk to your partner”) with behavior change messages (“Use condoms to reduce your risk of sexually transmitted disease”) can be an effective strategy, for each additional channel through which teens reported hearing the mass media messages resulted in an incremental boost to self-reports of condom use. Although not a clean test of exposure to a “Talk to your partner” message alone, this study suggests that conversation may help to shape campaign effects, offering an overall positive impact upon the desired outcome.

Messages that Support Post-Exposure Conversation

In another area of the literature, research has considered that some message forms might elicit more conversation than others. One study in northern Europe tested if messages can stimulate conversation among teenagers about the dangers of smoking. The authors devised several print messages that were designed to elicit emotion about the dangers of smoking (Hafstad et al., 1996). Hafstad and Aarø found these provocative messages to elicit conversation

consistently among audience members, although more talk among girls, and this discussion (particularly with peers) to predict favorable attitudes toward the campaign message of avoiding smoking. Although this study lacked a comparison group, the evidence nonetheless supports the initial position that the extent to which a message is provocative may predict whether or not it is successfully discussed in conversation and perhaps also processed and remembered.

Other research has compared a variety of message features that might support conversation about the message and campaign topic. In their study on smoking cessation messages, Dunlop and colleagues (2008) examined how narrative (described as an already more social form of message design by authors) and emotional messages might support post-exposure conversation, they found narrative was an effective vehicle for eliciting emotion in viewers, and the experience of emotion predicted indirect message effects, like interpersonal communication. Importantly, this interpersonal communication also supported quit attempts. This evidence suggests narrative messages, due to the emotion they elicit in viewers, may be particularly effective in supporting conversation after message exposure.

In sum, studies examining the impact of message form on post-exposure conversation have examined several different characteristics including provocative design, emotional appeal, and narrative. Taken together, these findings show initial support particularly for the role of emotion in eliciting conversation after a message is viewed.

Forced Talk Immediately Following Campaign Exposure in a Laboratory Setting

While some research calls upon recipients of a campaign message to talk with their spouse after exposure, other studies have asked participants in the context of the study to talk to fellow participants about a message. Recent work in this area has found both good (positive,

constructive) conversation to follow message exposure, but there is also evidence that not all conversation after a campaign may be useful.

In one study, researchers analyzed online conversations online among college aged students after viewing an anti -marijuana message. Specifically, the researchers asked participants to talk to their peers about the anti-marijuana message they just saw in an online chat-room (David et al., 2006). These authors found that, when allowed to discuss the ads freely, many teenagers engaged in “deviant” talk, or discussion that denigrated the message and instead talked favorably about marijuana use. Although not every conversation dyad in the David study spoke negatively about the message, results suggest that when conversation was deviant, these discussions were associated with cognitions counter to the campaign. Specifically, students who engaged in deviant discussion reported favorable attitudes toward marijuana use, and even intention to try this illegal substance. This study was among the first to make the case that conversation in health campaigns is consequential, but unfortunately while some conversation may enhance campaign objectives, not all conversation is constructive to the campaign.

Another study examined face-to-face conversations among participants after viewing an anti-binge drinking campaign message (Hendriks et al., 2013). Participants were asked simply to speak to a fellow participant in the experiment after the video. The researchers videotaped and analyzed these conversations. They found that conversation fell into one of two general categories –positive (e.g., conversation that was in line with the message objective) or negative (e.g., conversation that hindered the message objective). Hendriks and colleagues found positive conversations were associated with intentions that were aligned with the campaign (avoiding binge drinking). This study was among the first to observe post-health message discussion and to distinguish between different types of conversation that naturally followed message exposure.

All told, research on conversations and campaigns has taken many different forms. Research has asked socially influential individuals to talk to their peers, designed messages with a high probability of being shared socially, and specifically asked participants to talk about a message with other participants in the context of the study itself. Hendriks and colleagues found positive conversation followed exposure and predicted campaign-directed intentions, while David and colleagues found negative conversation followed exposure and predicted campaign incongruent intentions. The evidence thus suggests that understanding the type of conversation that transpires is a critical consideration.

At the same time, although evidence is building for the need to acknowledge that different types of conversation may follow health message exposure, the evidence behind these claims has largely been observational. Research to date has observed associations between the valence of natural conversation and campaign-targeted outcomes. While useful, these methods fail to rule out a key alternative explanation – that negative conversation is a *consequence* of behavioral intentions or negative attitudes about the behavior, not the *cause* of it. Observational research designs do not adequately account for the causal ordering between variables (which came first, the conversation or the attitudes) or rule out a variety of alternative explanations for these associations (some third variable causes both negative attitudes and negative conversations). Without causal evidence for when and why different types of conversation matter, we cannot draw definitive conclusions about the effects of conversational valence.

The Current Study

To better understand how different types of conversation elicit different outcomes in the context of a risk message, this dissertation study uses a randomized experiment to examine

positive versus negative campaign-generated conversation in socially mediated contexts, considering how the presence of a confederate might sway these outcomes.

Health messages can target a wide variety of health behaviors. This research selected the behavioral topic of sleep among college students for several reasons. The amount and quality of sleep dramatically declines during the college years (Carskadon, 2011; Rebecca Robbins & Niederdeppe, 2014), but sleep deprivation has a host of adverse consequences including both short-term (e.g., weight gain and irritability) and long-term harms (e.g., improper cognitive development; Carskadon, 2011; Maas et al., 2011). Although sleep has received less attention than behaviors such as binge drinking or unsafe sex behaviors in the context of risk communication campaigns, the prevalence of sleep deprivation coupled with the role this behavior plays in proper development suggests it may be a fruitful direction for college health and campaign efforts. In the section that follows, we offer both hypotheses and research questions pertinent to the study.

While some conversation can support a campaign's message objectives, conversation that denigrates campaign messages or the behavior being targeted may be particularly dangerous for support post-exposure protective health behaviors. In one recent analysis, researchers examined responses in the comment sections for anti-smoking advertisements posted on YouTube. Results from this study show many comments about the messages were quite negative, particularly if messages were humorous, or had low production quality (Paek, Hove, & Jeon, 2013). Further, David and colleagues (2006) found many conversations among teenagers online following an anti-marijuana message to be particularly negative, even termed 'deviant,' in response to the message. In this manner, understanding how audience members react to messages is of utmost

concern to understand the role of conversation in the context of an advertising or risk campaign, and specifically whether it helps or hurts campaign objective.

Evidence is building for the argument that conversation can be consequential in health campaigns, and conversations after health messages can take different forms. Unfortunately, the evidence to date has largely been observational and precludes definitive evidence for positive versus negative campaign-generated conversation. This research closes these gaps by employing a randomized experimental design, where participants engage in conversation with a confederate trained to sway the conversation to be either positive or negative in nature. The section to follow outlines hypotheses and questions for Study 1.

Participants will either answer the follow up survey after viewing the message (no chat), talk naturally with a confederate about college in general, or will engage in conversation with the confederate who is trained to sway the conversation to be either positive or negative. Evidence suggests that it might not take much to induce negative conversation following message exposure. The David et al. (2006) study showed that presence of just one ‘deviant’ peer is sufficient to elicit a boomerang effect. This dissertation draws inspiration from this research, but draws on random assignment and experimentally induced positive or negative conversations to explore the different relationships these conversations may offer in terms of beliefs and intentions relating to sleep. Specifically, I induced negative conversation by introducing a confederate to the conversation environment. The confederate was instructed to follow a script of comments that negatively evaluates the message content (eg, “Sleep sucks, who has time for that”) and message itself (“The guy in the video was so cheesy, no way I believe what he was saying”). Since negative comments have implications for individual evaluations and beliefs

according to David, I hypothesize that inducing negative conversation will elicit more negative reactions than the confederate-natural conversation condition:

H1: Inducing negative conversation (via a confederate instructed to speak negatively about the message and its content) in an online mediated setting will elicit more negative conversation from respondents than the confederate-natural conversation condition.

I further contend that conversation following campaigns could also generate desirable outcomes. In talking about a message, individuals can contribute to a message's or campaign's objective by sharing the message with others who may not have otherwise received it, thereby drastically expanding the reach of a campaign message (Boulay et al., 2002; Valente & Saba, 1998). Additionally, evidence suggests conversation can reaffirm campaign congruent cognitions (Dunlop et al., 2010). Another study found conversation that discussed the campaign message or target behavior (in this case, favorable conservative drinking behavior) in a positive tone were strongly related to behavioral intentions in line with the campaign (Hendriks et al., 2012). This observational evidence suggests that conversation can support positive health outcomes in line with a message.

Marketing research is another discipline all too familiar with the role of conversation in swaying communication and advertising efforts. Marketing scholars have found talking about a product, termed word of mouth (WOM) advertising or 'buzz,' to yield desired outcomes, such as increasing purchase behavior (Rosen, 2009). Research exploring the role of strategically placed, trained WOM-agents can elicit significantly more discussion about a specific product, and in some cases also more purchase intentions than many other marketing tactics (Carl, 2006). However, as pointed indicated in Carl (2006), not all WOM is good. Therefore, training WOM agents in how to generate positive discussion about a product is typically an important part of

efforts to ensure WOM does not hurt the marketing objectives. The current study manipulated conversation in one condition with a confederate, trained to sway the conversation in a positive direction, addressing the message and content in a favorable manner, to consider whether or not it is possible to promote positive conversation in a campaign.

H2: Inducing positive conversation (via a confederate instructed to speak positively about the message and its content) in an online mediated setting will elicit more positive conversation from respondents than the confederate-natural conversation condition.

Finally, without pre-existing research or evidence about confederate-natural conversations online among college students after viewing a sleep promotional message, we explore the nature of the confederate-natural conversations:

RQ1: What general valence are natural comments from college students after viewing the sleep promotional video message and engaging with the confederate-natural condition?

Negative versus Positive Conversation Following Sleep Message Exposure and Behavioral Intentions

Conversational valence is likely an important consideration in health campaigns, for different types of conversation have been found to be associated with different outcomes. Research has linked the way a campaign message is talked about with beliefs about a behavior, like social norms. Although not in the context of a health campaign, two studies have linked volume of discussion about high-risk behaviors with perceptions that these beliefs are normative (like promiscuous sexual behavior, Holman & Sillars, 2011; and binge drinking, Real & Rimal, 2007). While not in the context of message exposure, this evidence does suggest that conversation can impact important behavioral beliefs, like social norms.

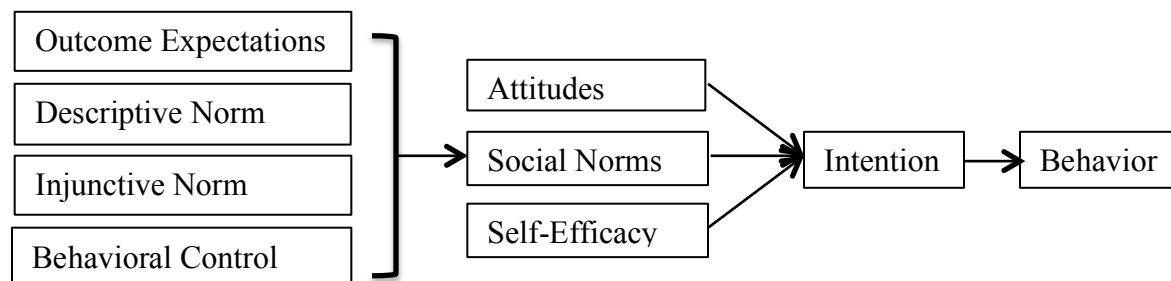
Research examining conversations in the context of health message exposure has also linked different types of discussion with different behavioral beliefs. The research conducted by David and colleagues (2006) of online chats among teenagers after watching an anti-marijuana message found exposure to peers who shared viewpoints and beliefs counter to the campaign elicited pro-marijuana attitudes (an outcome divergent from campaign objectives). Attitudes, or our fundamental evaluative beliefs about behaviors, are strong predictors of intentions to perform the behavior according to seminal theory on belief formation and behavior (Feather, 1982).

In their study evaluating the normalization campaign for condom use, Frank and colleagues found conversation valence predicted social norm perceptions. Specifically, conversation that was positive (supported the campaign message and importance of condom use) was associated with perceptions that condom use was normative, while negative conversation (counter arguing of the message and condom use itself) was inversely associated with norm perceptions (Frank et al., 2012). In this research evaluating message effects, social norms about condom use were reported to be highest when the conversation happened to be positive after message exposure. It should be noted, however, that the Frank study specifically targeted normalization of condom use in its message design, so observing correspondence between conversation (specifically, positive conversation) and social norm perceptions represents evidence of campaign success.

This research suggests that beliefs about a health message or its recommendations, including both attitudes and social norm perceptions, can differ depending upon the type of conversations individuals engage in after receipt of the information. Beliefs like social norm perceptions and attitudes can determine whether a behavior will be performed (according to the Theory of Reasoned Action, or TRA; Ajzen & Fishbein, 1980). To understand how different

conversations effect behavioral beliefs and intentions, we draw upon the most recent version of the TRA, the Integrated Model of Behavioral Prediction (IMBP; Fishbein & Yzer, 2003; Figure 2.1). The IMBP argues that behavioral intention is perhaps the most important consideration in determining whether a behavior will be performed, or whether it will not.

Figure 2.1
Integrated Model of Behavioral Prediction (IMBP; Fishbein & Yzer, 2003).



While beliefs are important in understanding behavior, a more direct test of the impact a message or conversation presents for behavior is to consider its relationship to intention (O’Keefe, 2013). Building on the evidence cited above, but emphasizing the critical construct of behavioral intention, this paper expands on the findings of correspondence between conversation and beliefs, to argue that the more proximal construct, behavioral intention, will vary depending on the type of conversation participants are exposed to. Specifically, I hypothesize positive conversation will be positively associated with behavioral intention to perform the behavior recommended in the message, whereas negative conversations will be inversely associated with behavioral intentions to perform the behavior advocated in the message:

H3A: Positive conversation will be positively associated with intentions to comply with the message (get 7 – 8 hours of sleep most nights per week).

H3B: Negative conversation will be negatively associated with intentions to comply with the message (get 7 – 8 hours of sleep most nights per week).

This research expands and refines our understanding of health-related conversation. Using a randomized assignment this is the first study to our knowledge to engage a confederate to experimentally induce positive or negative conversation about the message and topic. Further, the study will focus on conversational reactions and how these conversations may bear consequences for health decision-making among college students. This research contributes to understanding of conversations that take place in the context of a risk campaign approach to behavior change by examining both conversations that are supportive of (positive) or counter to (negative) the campaign objective.

In addition, this dissertation helps clarify when and how socially mediated communication, a specific form of social influence, relates to behavioral beliefs and health-related decisions. In so doing, this work expands upon the previously under-researched topic of varying degrees of success from risk communication-based approaches to reducing risk behavior. To do so, this research proceeded in two phases (1) qualitative focus groups followed by (2) a randomized, between-subjects experiment to induce positive- and negative- conversations about sleep and assess how these conversations shape message-targeted behavioral intentions.

Phase One

Phase one research consists of in-depth focus group interviews with a convenience sample of the population (college undergraduates) gauging their reactions to a sleep promotional message. I analyzed the focus group data to identify common responses from focus group participants for subsequent use in the randomized experiment.

Methods

In the focus groups, I began by asking participants to watch the video and then to comment freely about it. From the transcripts of these conversations I identified common video

reactions – good and bad – that I used in designing the chat room scripts that would be used by the confederate in the experimental confederate-positive or confederate-negative conditions in the phase two study (Downs & Hausenblas, 2005). I recruited a sample of students (n=32, 18 female, 14 male, aged 18 – 22 years; all undergraduate students) for the focus group phase using in-person intercepts outside a main library on the campus. I led the focus groups, which consisted of four to six students and followed an open-ended interview protocol. I transcribed these interviews and then thematically analyzed their content.

Focus Group Interview Protocol

The interview protocol first assessed general qualities of participant sleep habits and patterns (“I’m curious about your general sleep habits. How much sleep do you get on a typical weeknight? What about weekends?”). I used these general introductory questions to ease participants into the discussion, and help direct the students in their thinking toward the behavioral context (talk about sleep). Next, I explained that I was curious about their reactions, and I asked the participants to take notes while they watched a brief, informational video on the importance of healthy sleep. Once the video was over, I gave the participants several moments to finish any notes they were taking, then started with the simple question, “So, what did you think about the video?” To ensure both positive and negative reactions were collected, and on both the topic in the video and reactions to the message itself, I asked additional probes when necessary, such as “What do you think about the speaker featured in the video?” I asked a variety of other questions about these young people’s everyday conversations about sleep, the topics covered, and the various partners engaged in conversation on the topic of sleep, but these will be discussed further in Chapter 3’s methods section. See the Appendix for the full focus group protocol.

Sleep Promotion Message

All participants in both the focus group and phase 2 experiment watched a sleep promotion video message featuring a sleep expert (e.g., a person trained in sleep medicine). The video was created for educational purposes in 2012 by the lead researcher and a team of undergraduate research assistants. The video addresses the consequences of sleep deprivation and provides tips for getting healthy sleep. The scripts for the video were drafted by lead researcher and drew from the literature in sleep medicine on scientifically proven evidence and recommendations for good sleep (Carskadon, 2011; Maas et al., 2011; National Sleep Foundation, 2006). A full transcription and screen shot of the video can be found in the Appendix.

Analysis

The primary objective of focus group data analysis was to identify common everyday discussion sub-topics within the broad topic of sleep, and to see how participants reacted conversationally in these groups to the video on healthy sleep. Discrete, individual comments were the unit of analysis. An ideal approach allows the researcher to identify prominent themes in qualitative data, and the intersections and boundaries of these different themes (Fielding & Lee, 1998). I aimed to follow these guidelines in developing my coding procedure and analyzing the data. The analysis included a first reading where I simply read the transcripts and applied no codes to gain a better understanding of the flow of the discussions.

Two rounds of analysis were conducted. In the first round of analytical reading, I assigned codes freely and in a manner to provide labels and categorizations for each quote as they came to mind. In the final coding procedure, I engaged in a focused coding approach where I synthesized codes assigned in the first round and refined them into a smaller set of codes. If a

response was offered by more than half of study respondents, I selected it for inclusion in the phase two questionnaires and applied the basic gist of the idea in the design of the confederate transcripts for the confederate-positive and confederate-negative experimental conditions.

Results

Focus groups were designed to solicit general reactions to the sleep promotional video from students. Qualitative, thematic analysis of focus group data illustrated the most common conversational reactions college students provided to the sleep promotional message, and would be used in the closed-ended survey to assess positivity or negativity of conversations in the phase two experiment.

Table 2.1 displays results from the qualitative analysis of focus group responses to the video, along with exemplary quotes. Reactions from focus group participants to the video were divided between comments about the topic of the video (sleep) and heuristic factors associated with the video (speaker, etc). Within these two broad types of comments, I discovered sub-dimensions within sleep-related conversations, where participants discussed the importance of sleep, and reasons for getting healthy sleep. On the other hand, within the video-related comments, participants most commonly discussed either the speaker's tone of voice, or his credibility. These four types of comments were then used in the Phase 2 survey to understand conversational valence. Specifically, participants were asked four questions using the stem "How negative or positive was the conversation you just had" and subsequent conversation topics, including "reasons to sleep," "the importance of sleep," "the credibility of the speaker in the video" and "the speaker's tone of voice."

Qualitative phase one research also generated comments that inspired the Phase Two confederate transcripts. Comments from students were chosen along the four target areas for the

confederate scripts (topic of sleep, message reactions, etc). Comments were selected if they were negative, or provided unfavorable evaluations of the topic of sleep (“Personally, when it comes to sleep, there are other things I would prefer doing”) or the message itself (“Who even was that guy? He was drilling information at you, he spoke too fast”). The confederate scripts for each condition can be found in Table 2.2.

Phase Two

Phase two research consists of a randomized experiment where participants watched the same sleep promotional video that focus group participants viewed, chatted about the video online (in all but one no-chat control condition), and then responded to a brief questionnaire. The experiment was administered to a larger (but independent) sample of students from the same university as the participants in the phase one research. The lead researcher obtained IRB approval for both phases of this study at the author’s home Institutional Review Board.

Table 2.1
Focus Group Reactions to the Sleep Promotional Video (N = 31).

<i>Component</i>	<i>Supporting Quotation</i>
Conversational Reactions on the Topic of Sleep	
Consequences of sleep deprivation	<ul style="list-style-type: none"> • “Yeah I basically thought about the consequences like poor decisions, depression, drowsiness, so I can see how that correlates with me not having enough hours to sleep” (Female, sophomore) • “So many negative thoughts, when you’re watching it I cant even count how many negative things he’s said and it’s all true and it’s al things we’ve heard before but it’s all in one place now” (Female, sophomore)
Importance of sleep	<ul style="list-style-type: none"> • “That’s the thing so many people can do it just don’t want to personally I love the feeling of having a full night’s sleep but personally I hate sleeping because I prefer to be doing other things and I feel at times it’s like a waste of time even though you need it but year, definitely easy to do if you put your mind on it even if it’s hard and you don’t see any tangible effects immediately” (Male, junior) • “ I just know at one point my body did get accustomed to getting less sleep because I was getting five or six hours a day and I just got used to it so I didn’t really feel the symptoms he was describing so maybe I just subconsciously made bad decisions but I don’t’ consciously remember feeling anything because I just kind of got used to it” (Female, sophomore)
Conversational Reactions to the Video	
Tone of the speaker’s voice	<ul style="list-style-type: none"> • “I feel like it was almost judgmental or like he was angry at me” (Male, sophomore) • “I’d say it’s more when it’s bad sleep. Like, a lot of the time sometimes I’m with my friends I’m, like, ‘Oh. I’m so tired. I can’t do anything. I need to go take a nap.’ That kind of thing.” (Female, sophomore)
Speaker’s credibility	<ul style="list-style-type: none"> • Sean: I don’t know who that is. So, you don’t know his credibility. (Male, junior) • “I noticed who he was and dr on his coat so I guess I would believe him but I don’t know what type of doctor he is” (Female, junior)

Table 2.2
Focus Group Positive and Negative Comments (N = 31).

	Actual Comments from Focus Group Participants	
	<i>Positive</i>	<i>Negative</i>
Attitudes toward Sleep	<ul style="list-style-type: none"> • “So, the video was kind of preaching to the choir for me I love sleep!” • “It depends on the night but I usually get about 8 hours” • “I do so much better with adequate sleep in school etc” 	<ul style="list-style-type: none"> • “Personally, when it comes to sleep, there are other things I would prefer doing” • “I just can't see the benefit when there are so many other things like hanging out with my friends”
Reactions to the Video	<ul style="list-style-type: none"> • “I liked how straightforward the video was. Also, what really struck me are what the side effects are of not getting enough sleep, made me happy I make sleep a priority” • “I thought the video was pretty straightforward, and I liked how the speaker just delivered straight, easy to follow facts” 	<ul style="list-style-type: none"> • “I did not really like the video. It was almost a little absurd, like, all these awful things are going to happen to me if I don't get enough sleep” • “How was the guy in the video? He looks like a paid actor (laughs)” • “He was drilling information at you, he spoke too fast”
Self efficacy to follow advice	<ul style="list-style-type: none"> • “Even though my sleep habits are already pretty good, the video was a helpful reminder, because this is when the semester starts to pick up.” • “The video was a great reminder to continue to make sleep a priority” 	<ul style="list-style-type: none"> • “I feel like I understand the risks of short term cognitive and long term risks” • “I feel like sleep - how much we get and all that - is just not really our choice in college with all the other things going on”

Methods

I recruited participants ($n=301$) for phase two from college courses offering extra credit for research participation. Table 4 shows participants for phase two were 74.1% female ($n=223$) and 25% male ($n=76$). Age of respondents ranged from 17 to 23 with an average age of 20 years. With the exception of freshmen ($n = 21$; 7% of the sample), there was distribution in college year across sophomores ($n = 106$; 35% of the sample), juniors ($n=104$; 35% of the sample), and seniors ($n = 70$; 23% of the sample). The sample was 57% white ($n = 172$), 25% Asian ($n = 75$), 7% Black ($n = 21$), 5% Latin American ($n = 14$) and 5% other ($n = 14$).

I measured sleep behavior using two items to assess sleep on weeknights, and sleep on weekends. Participants were asked to provide agreement with the phrase “I sleep 7 to 8 hours at night most nights of the school week” to understand weeknight sleep, and then “I sleep 7 to 8 hours at night most nights of the weekend” to understand weekend sleep, on a scale from -3 (strongly disagree) to 0 (neutral) to 3 (strongly agree). I selected this specific behavior based on findings in the sleep medicine literature on the importance of 7 to 8 hours for full functioning and general health (National Sleep Foundation, 2008).

Consistent with the literature (Carskadon, 2011; Maas et al., 2011; Rebecca Robbins & Niederdeppe, 2014), respondents reported sleeping longer on weekends than during weeknights. Specifically, participants agreed with the statement about getting adequate sleep on weekends ($M = .86$, $SD = 2.0$) than weeknights ($M = -.89$, $SD = 2.1$). Given the inconsistent sleep schedules, and overall low agreement during the weekends, these data suggest the college population is indeed one deserving of attention in sleep and health promotion.

Table 2.3
Phase Two Participant Demographic Statistics.

<i>Variable</i>	<i>N</i>	<i>%</i>	<i>M (SD)</i>
Age	301		19.9 (1.15)
Race			
White	172	57.1%	
Asian	75	24.9%	
African American	21	7.0%	
Latin American	14	4.7%	
Other	14	4.7%	
Missing	4	1.3%	
Year in School			
Freshman	18	6.0%	
Sophomore	106	35.2%	
Junior	104	34.6%	
Senior	70	23.3%	
Missing	3	1.0%	
Gender			
Male	76	25.2%	
Female	223	74.1%	
Missing	2	0.7%	
Sleep Behavior			
Weeknight sleep [†]			0.86 (2.0)
Weekend sleep [†]			-0.89 (2.1)

[†]Agreement with “On the given weeknight/weekend I sleep for 7 to 8 hours at night”

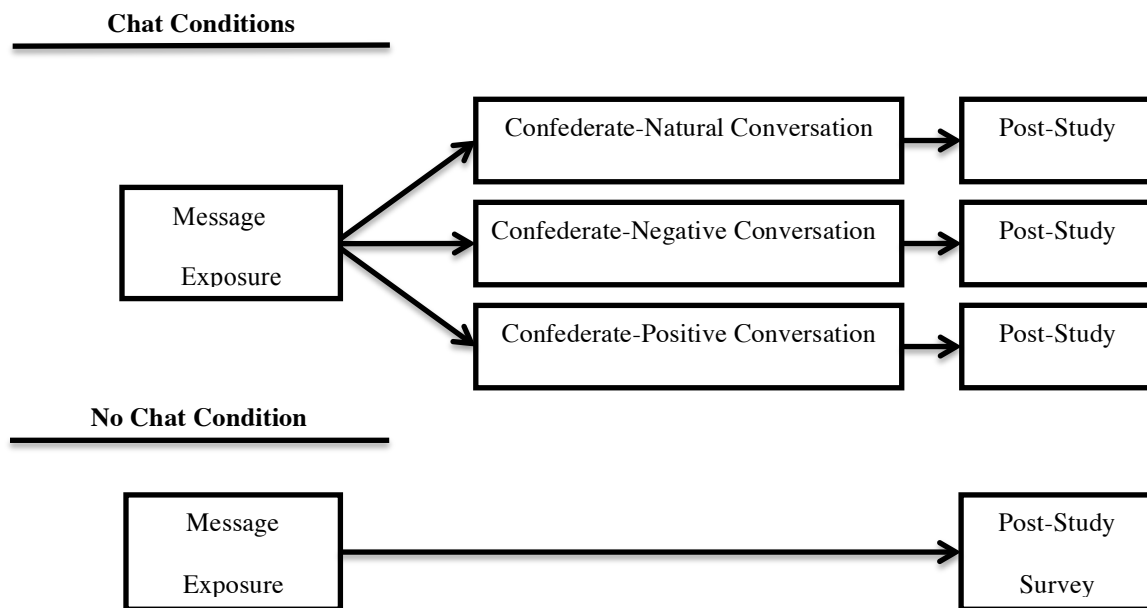
I recruited respondents via an online system where students enrolled in social science and information technology courses browse, sign up for, and participate in studies for extra credit. I asked those who signed up to participate in the study to provide informed consent before

proceeding to complete the survey via the first webpage of the online survey. I offered participants extra credit for their participation.

This study examines the effect of online group interaction among college students after watching a health message. Using a confederate, I manipulated interactions in the online mediated setting to be natural (where the confederate did not attempt to sway the conversation in one direction or the other), positive, or negative in three distinct experimental groups. To offer a comparison group, a fourth, offset control group was created that would not enter the chat at all but instead go directly to the post survey. Thus, the study features four conditions: (1) message only – no chat, (2) message followed by confederate-induced -natural conversation, (3) message followed by confederate-induced negative conversation, and (4) message followed by confederate-induced positive conversation. The study design is outlined in Figure 2.2.

Randomization into experimental conditions took place initially by the survey software platform into either the offset control condition (with 1/4 probability) or the experimental chat conditions (with 3/4 probability). During the data-cleaning phase, I realized that some participants in the experimental conditions did not participate in the chat portion of the experiment. Due to these kinds of technical issues, these cases from the experimental groups that did not follow instructions were dropped, and the distribution of participants cross the four conditions in the experiment was unbalanced. Specifically, among the participants who completed the study, 83 were in the message only – no chat condition, 59 were in the message followed by confederate-natural chat condition, 67 were in the message followed by confederate-negative chat group, and 81 were in the message followed by confederate-positive chat group.

Figure 2.2
Chapter 2 Experimental Chat Study Design.



Experimental Procedure

It would be impossible to maintain anonymity in the lab if students were participating in chat conversations in the same room, making the use of a live confederate logistically challenging. For this reason, when I recruited participants, I instructed them to select an experimental time slot at which time they would follow a link to begin their study at the assigned time. I sent students a reminder email 24 hours before their experimental time slot, and instructed them to not be late as the study included an online chat component, so their attendance was critical for another student to receive credit. I also asked students to complete the study in a place that was quiet so they could focus and have fast and easy access to Internet.

When an experimental time slot began, the confederate (myself and an undergraduate research assistant) sent participants an email with a link to the online survey to begin their study. As soon as the students clicked on the link provided, the survey randomly assigned them into either the control condition or experimental conditions. After the online consent form, the next

screen to appear requested participants to watch a video embedded on the page that talks about sleep. I programmed the page to not advance until the video played in its entirety. Participants in the control condition proceeded to the post-exposure online questionnaire, but participants in the experimental conditions received instructions for entering the online chat program in a separate window to begin the chat portion of the study.

Participants in the experimental condition received instructions to go to the online chat client in a new window, and log in using credentials provided on their screen. I asked experimental participants to contact a chat partner using username credentials provided to them. I generated usernames and passwords for the study, and these experimental accounts were cleaned out after each chat so participants would not be able to see previous conversations. All usernames started with “SleepHealthStudy” with a number from 2 through 20 afterward (i.e., SleepHealthStudy2, SleepHealthStudy3, and so on). I gave all participants the same partner credentials (username: SleepHealthStudy1) to chat with. Unknown to the participant, SleepHealthStudy1 was not another student, but a study confederate posing as a fellow participant. The participant sent a request to SleepHealthStudy1 to chat, the confederate accepted, and the confederate initiated the conversation.

I scheduled one participant per experimental time slot. When each time slot began, the confederate signed onto the chat client, and waited to hear from the participant. Within the experimental condition, the confederate performed the randomization into confederate-natural, negative – induced conversation, and positive – induced conversation. At the beginning of each time slot, the confederate used a random number generator to find out whether to speak naturally, negatively, or positively. The confederate maintained records of the experimental

assignment and chat duration. Once the chat was over, the confederate saved the conversation to a password-protected computer and wiped the chat account clean for the next participant.

Two confederates (myself and a trained undergraduate research assistant) delivered the chat scripts as consistently as possible. Using a method validated elsewhere (Jiang, Bazarova, & Hancock, 2011), confederates in the confederate-natural condition engaged the participant in a general conversation about college, covering topics like major, and “survival strategies.” In the negative – induced conversation condition, confederates talked negatively about both the topic of the message (e.g., “I love sleep! Try to get 8 hours every night”) and the message itself (e.g., “I liked how straightforward the message was”). Finally, in the positive – induced conversation condition, confederates talked positively about the topic of the video (e.g., “I just don’t value sleep, usually get by on 5 hours”) and the message itself (i.e., “Who was the guy in the video anyway?”). The confederates were instructed to speak in a manner as consistent as possible with the script corresponding to the condition, while also ensuring the conversation was as realistic as possible. Sample transcripts from the experimental chat conversations for each condition can be found in the Appendix.

The questionnaire was conducted using Qualtrics software. This robust survey platform enabled video viewing, informational screens to instruct chat participants to leave the experiment and begin the chat, and instructions to help them successfully return to complete the final survey portion of the study. Participants in the no chat condition watched the video and proceeded directly to answer the post-study questionnaire, and then exited the experiment. Participants in the chat conditions watched the video but before answering the post-study questionnaire, entered an online chat room designed to replicate traditional social media systems (e.g., each entry had a 140 character limit to mimic limitations of Twitter messages). Students were matched with the

confederate on the chat platform and instructed to talk about the message and topic of sleep generally. The chat component of the experiment was limited to 5 minutes. The chat portion of the conversation conditions was conducted in chat rooms via Google Chat, an online platform for private online private one-to-one chat conversations.

Measures

The surveys included a series of closed-ended, Likert-scaled questions. Questions were completed right after exposure to the message (Condition 4) or following the chat segment (Conditions 1 – 3). The surveys assessed conversation valence, sleep-related attitudes and beliefs, behavioral intention, and several measures of cognitive evaluation of the message including perceived effectiveness and psychological reactance. The focus of Study 2, described in Chapter 3, is on everyday conversations about sleep and their relationships to behavioral beliefs about sleep. Those items will be elaborated upon in Chapter 3, but briefly analyzed here.

Although not a main focus of the current study, positivity and negativity of everyday conversations was examined by condition as a manipulation check to query if the valence of conversation in the study reflected the overall positive or negative nature with which sleep is discussed on an everyday basis. Table 2.4 displays results of the ANOVA comparing everyday positive or negative talk by condition. Results indicate that neither everyday positive talk about sleep $F(3,287) = .491, p = .69$ nor everyday negative talk about sleep $F(3,292) = .58, p = .63$ vary by significantly by experimental condition.

Perceived message effectiveness. I measured perceived agreement with the message using six items from a scale of perceived argument strength that has been validated in the literature (Zhao, Strasser, Cappella, Lerman, & Fishbein, 2011). Participants provided levels of agreement (from 1, strongly disagree, to 4, neither disagree nor agree, to 7, strongly agree) with

questions such as “The video was convincing” and “the video about sleep said something important to me.” I recoded responses by subtracting 4 so that negative responses indicated negative valence, and positive indicated positive valence. The measures were averaged for a single scale with high reliability ($M = 0.6$, $SD = 0.8$, Cronbach’s $\alpha = .78$).

Psychological reactance to the message. Reactance to the message was assessed as in past research with an affective assessment (Quick & Considine, 2008). This scale collects agreement (from 1, strongly disagree, to 4, neither disagree nor agree, to 7, strongly agree) with statements such as “While watching the video on sleep, I felt annoyed” and “While watching the video on sleep, I felt irritated.” I recoded responses by subtracting 4 so that negative responses indicated negative valence, and positive indicated positive valence. These items were averaged into a single scale for reactance with high reliability ($M = -1.3$, $SD = 1.3$; Cronbach’s $\alpha = .92$).

Table 2.4
Manipulation Check ANOVA of Everyday Sleep-Related Talk by Condition (N = 301).

	Control Condition		Confed.- Natural		Confed.- Negative		Confed.- Positive		ANOVA	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>p</i>
Everyday Talk about Sleep										
Everyday Positive Talk	6.1	2.0	6.0	1.9	6.1	1.8	6.4	1.7	0.5	.689
Everyday Negative Talk	6.9	2.1	7.2	1.9	7.3	1.7	7.1	1.8	0.6	.627

Positive emotion from the message. Positive emotion was measured by asking participants to mark agreement with two statements “While I was watching the video about on sleep, I felt content” and “...joy” on a scale from (from 1, strongly disagree, to 4, neither disagree nor agree, to 7, strongly agree). I recoded responses by subtracting 4 so that negative responses indicated negative valence, and positive indicated positive valence. The two measures were averaged to form a single scale of positive emotion ($M = -0.5$, $SD = 1.2$; Cronbach’s $\alpha = .62$).

Conversational realism. I gauged how realistic the manipulated conversations were perceived to be using a three item scale previously validated in the literature (Hendriks et al., 2013). Participants marked agreement on Likert scales from 1 (strongly disagree) to 7 (strongly agree) with questions such as “The conversation I just had online was realistic,” and “How I conversed online in this study was similar to how I normally converse.” I recoded responses by subtracting 4 so that negative values indicate disagreement, while positive values indicate agreement with the statements about conversation realism. The items measuring conversational realism scaled well, with high reliability ($M = 0.3$, $SD = 1.3$; Cronbach’s $\alpha = .73$).

Perceived chat valence. To understand perceived valence of the chat discussion, I asked participants in experimental conditions (confederate-natural, positive – induced, and negative – induced) how positive or negative they perceived the conversation. Specifically, participants indicated how positive or negative from 1 (very negative) to 7 (very positive) they discussed the specific sub-topics identified from Phase 1 (topics displayed in Table 2). I recoded responses by subtracting 4 so that negative responses indicated negative valence, and positive indicated positive valence. The four items were joined into a single scale of perceived chat valence with high reliability ($M = .42$, $SD = 1.7$; Cronbach’s $\alpha = .79$).

Direct behavioral constructs. To evaluate relationship between different types of conversation and behavioral beliefs about sleep, this study draws on the behavior prediction theory, specifically the Integrated Model of Behavioral Prediction (Fishbein & Azjen, 2009). The measures described below evaluate the model's three major categories of cognition about behavior, including attitude, norm, and behavioral control, and specifically, relating to sleep.

In the current study, I used measures for IMBP constructs that have been validated in previous research on adolescent and college student sleep behavior (Robbins & Niederdeppe, 2014). In keeping with the approach taken by Robbins and Niederdeppe, direct constructs (attitude, norm, control), intentions, and behavior were collected using several items, then averaged to form single scales for each construct.

Attitudes were measured by collecting responses using the question stem "Overall, I think sleeping for 7 to 8 hours at night most nights per week is...." And differential pair response scales, including good – bad, unpleasant – pleasant, and harmful – beneficial. Responses were collected on a 7-point scale, then recoded by subtracting 4 so that negative responses indicated unfavorable attitudes toward sleep, while positive values indicate favorable attitudes toward sleep. Attitude items were averaged to form a single scale with high reliability ($M = 1.33$, $SD = 1.84$, Cronbach's $\alpha = .95$).

Beliefs about social norms were measured with several questions about normative social referents. Participants provided responses to questions about others beliefs about sleep, including "Most people who are important to me would appreciate it I slept 7 to 8 hours at night most nights of the week" and "Most people who are important to me would be supportive if I slept 7 to 8 hours most nights of the week." Agreement with these statements were collected on a scale from 1 (strongly disagree) to 7 (strongly agree), then recoded by subtracting 4 so that negative

responses indicate disagreement, while positive responses indicate agreement. Norm measures created a single scale with strong reliability ($M = 1.6$, $SD = 1.0$, Cronbach's $\alpha = .83$).

Behavioral control was measured directly with three items. Participants provided agreement with phrases such as "I am confident that I can sleep for 7 to 8 hours at night most nights of the week" and "Whether or not I sleep for between 7 and 8 hours at night most nights of the week is entirely up to me." Responses were provided on Likert scales of agreement from 1 (strongly disagree) to 7 (strongly agree) and recoded by subtracting 4 so that negative responses indicated disagreement, and positive responses indicated agreement. Belief items formed a single scale with high reliability ($M = 1.92$, $SD = 1.50$, Cronbach's $\alpha = .87$).

Behavioral intention were assessed by collecting agreement with a series of statements, including "In the next two weeks I plan to sleep 7 – 8 hours most nights of the week," and "I am willing to sleep 7 – 8 hours most nights of the week" using a 7-point scale from 1 (strongly disagree) to 7 (strongly agree). Measures were recorded by subtracting 4 so that negative measures indicate lack of behavioral intention, while positive indicate intention. The measures were averaged to form a single scale of intention with high reliability ($M = 1.13$, $SD = 1.5$; Cronbach's $\alpha = .90$).

Objective Measures of Conversation Valence with LIWC Computer Coding

In addition to measures of self-reported valence, I also measured conversation valence objectively. Objective measures of valence were developed by computer coding of the conversation transcripts using the linguistic word count (LIWC) software program. Before transcripts were run through the software program to determine objective valence, transcripts were cleaned so that only discussion about either the message or the topic of sleep were analyzed. For instance, the confederate would typically respond to the participant's chat

invitation with “Hey! How are you?” And the participant would respond “Great!” which could be coded as either positive or negative by the software despite not relating to talk about message or topic of sleep. Once the transcripts were removed of these small talk words, the content remaining had to do only with either the topic of sleep or the message (termed “experimental conversation”) and unrelated discussion about topics not relating specifically to the message or sleep (termed “unrelated”).

To distinguish, systematically, between experimental and unrelated online chat conversations, content analysis was conducted using two coders. The coders, myself and a research assistant (who was also the other confederate in the study), met several times to discuss the differences between experimental and unrelated conversation, and practice coding several conversation transcripts. Then, coding proceeded whereby my research assistant and I independently coded transcripts comments into categories labeled “experimental” and “unrelated.” Two spreadsheets were created with the list of codes applied for my analysis, and for the analysis conducted by my research assistant. Using the KAPPA plug in for SPSS v. 23, I compared my responses to those of the research assistant’s. Since the coding task was quite simple, the overall KAPPA was quite high ($r = .96$), indicating the coders were systematic in distinguishing between conversations related to the experiment, and unrelated.

One final cleaning procedure was conducted before the transcripts were analyzed using the computer program. Now that text files for each online chat from the study were cleaned so that they contained only experimental conversation (sleep or message-related), two files from each conversation were created to distinguish between comments from the participant and comments from the confederate.

Once experimental conversation transcripts were cleaned and separated, I ran these text documents through linguistic inquiry word count (LIWC) software. LIWC is analysis software that analyzes text-based documents word by word. LIWC counts the percentage words in the text match up to 82 sub-dimensions across several broad linguistic categories such as basic descriptors (word count, pronouns, and verbs), psychological constructs (e.g., affect, cognition, biological processes), personal concern categories (e.g., work, home, leisure), and paralinguistic dimensions (e.g., asset, negate). The register has varying numbers of words within each sub-dimension. For instance, there are 30 words that will register as “assent,” but 915 that are assigned to the category “affect.” The software is programmed to generate numbers of words within each dimension that are observed.

Table 2.5 displays descriptive characteristics of the objective (LIWC generated) measures of conversation valence for both the participant and confederate. These measures were created by combining specific word count categories generated by LIWC. For example, confederates in the positive and negative conditions were trained to agree with the message and importance of sleep (confederate-positive) or disagree with the message and importance of sleep (confederate-negative). Measures of valence for confederates in the confederate-positive condition were created by adding together “assent” and “positive emotion” word counts ($M = 7.7$, $SD = 3.3$). On the other hand, “negate” and “negative emotion” word counts were added together to create measures of valence for confederate comments in the confederate-negative condition ($M = 3.6$, $SD = 2.6$). Objective valence measures for positive valence and negative valence for the confederate-natural confederate comments were created by simply using the “positive emotion” and “negative emotion” word counts.

Table 2.5
Actual (LIWC Coded) Conversation Valence by Condition (N = 301).

	Total		Confed.- Natural		Confed.- Negative		Confed.- Positive	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Actual (LIWC Coded) Conversation Valence – Participant								
Positive Comments	7.7	3.3	5.0	3.7	3.6	3.1	8.5	2.5
Negative Comments	3.3	1.7	0.9	1.1	4.0	1.8	3.3	1.7
Actual (LIWC Coded) Conversation Valence – Confederate								
Positive Comments	7.7	3.3	8.1	3.8	3.6	1.9	8.6	4.1
Negative Comments	3.6	2.6	2.8	2.0	4.6	2.2	3.6	2.8

Objective measures of valence were devised also for participant comments in the chat conditions. Positive valence measures were created by summing “assent” and “positive emotion” words for participants in the confederate-positive conditions ($M = 8.5$, $SD = 2.5$); “negate” and “positive emotion” words for participants in the confederate-negative conditions; and “positive emotion” words for participants in the confederate-natural conditions ($M = 5.0$, $SD = 3.7$). On the other hand, objective measures of negative valence were created for participant comments in the chat conditions by summing “assent” and “negative emotion” words in the confederate-negative conditions ($M = 4.0$, $SD = 1.8$), and “negate” and “negative emotion” words in the confederate-positive conditions ($M = 3.3$, $SD = 1.7$). Finally, negative valence was simply measured in the confederate-natural condition by using the “negative emotion” word count ($M = 0.9$, $SD = 1.1$).

Data Cleaning and Analytical Approach

I used SPSS statistical software (version 22) to conduct all descriptive and inferential statistical analyses. To ensure the success of randomization across conditions, I performed analysis of variance (ANOVA) using self-report responses to conversation valence to ensure the positive – induced condition participants report higher perceptions of positive conversation, and negative – induced conditions report more perceptions of negative conversation than the control and confederate-natural conditions. In addition, I used ANOVA to examine difference in responses to IMBP variables and other chat perceptions (attitudes, social norms, behavioral control, intention, message evaluation, reactance, emotion, and realism) by condition. Where the omnibus ANOVA tests were significant, I further explored pairwise comparisons using post-hoc tests. In each case, the LSD test was used for post-hoc tests. Finally, ordinary least squares regression (OLS) was used to understand the relationship between conversation valence and behavioral beliefs from the IMBP, as well as potential mediating variables in the relationship between conversation and the primary outcome variable (intention).

Phase Two

Results

Phase two research examined outcomes of experimentally – induced conversation following exposure to a video message about the importance of sleep among a population of college students (N = 301). I first discuss general message reaction results, followed by results of the hypothesis tests examining the relationship between post-message conversation valence and healthy sleep intentions.

Evaluation of the sleep message and experimental conversation. Table 2.6 displays participant reactions to the message and conversation, including message effectiveness,

psychological reactance, positive emotion, and conversational realism. On average, participants provided responses to perceived effectiveness of the video near the scale midpoint, although slightly positive indicating overall generally favorable perceptions of the video ($M = .6$, $SD = .8$). Psychological reactance did not appear to be an issue in this message-based study, as participants provided overall low (negative) responses to reactance items ($M = -1.3$, $SD = 1.3$). Responses to positive emotion were also near the midpoint, although slightly negative suggesting that not too much positive emotion was elicited in participants in message exposure ($M = -.5$, $SD = 1.2$). Finally, responses to conversational realism were positive, suggesting experimental conditions viewed the interactions as relatively similar to those they have in their lives ($M = .3$, $SD = .3$).

Table 2.6
Message and Chat Reaction Variables by Condition (N = 301).

	Overall		Control		Confed.- Natural		Confed.- Negative		Confed.- Positive		ANOVA	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>p</i>
Reaction Measures												
Perceived Effectiveness	0.6	0.8	0.7	0.6	0.8	0.6	0.0	0.8	0.8	0.8	24.6	.001
Psychological Reactance	-1.3	1.3	-1.5	1.2	-1.4	1.2	-0.9	1.4	-1.6	1.3	3.7	.013
Positive Emotion	-0.5	1.2	-0.3	1.3	-0.5	1.1	-1.0	1.1	-0.3	1.2	5.5	.001
Conversation Realism	0.3	1.3			0.3	1.3	0.3	1.2	0.2	1.3	1.5	.228

I observed significant differences by condition for ratings of effectiveness, psychological reactance, and positive emotion. Responses to effectiveness varied significantly by condition $F(2, 211) = 24.6$, $p = .001$. Post hoc tests revealed that the confederate-negative chat condition offered lower perceived effectiveness of the message than the confederate-natural condition ($M =$

.0 v. $M = .6$; $p < .001$) and the confederate-positive condition ($M = .0$ v. $M = .8$; $p < .001$).

Psychological reactance varied significantly by experimental condition $F(2,215) = 3.7$, $p < .013$, which appears to be driven by the comparison between the confederate-positive and confederate-negative conversation conditions ($M = -1.6$ v. $M = -.9$; $p < .01$). Finally, positive emotion also varied by condition $F(3,295) = 5.5$, $p < .001$. Post hoc tests indicate participants in the confederate-negative conversation condition reported less positive emotion than confederate-positive conversation ($M = -1.0$ v. $M = .02$; $p < .001$).

Conversation Valence (Hypotheses 1 through 3)

Participants provided their perceptions of conversation valence via self report (“How positive or negative was the conversation you just had...”) and then objective valence measures were created by coding transcripts with LIWC (linguistic inquiry word count) software.

Hypotheses 1 through 3 were tested using both perceptions of conversation valence and actual comments (computer/LIWC coding).

Table 2.7 illustrates descriptive characteristics of conversation valence perceptions by condition. Conversation in the confederate-natural condition was not as negative as expected. Participants overall perceptions of conversation valence were near the scale midpoint ($M = .9$, $SD = 1.0$), as were their perceptions of message-related conversation ($M = .3$, $SD = 0.9$), but perceptions of sleep-related conversation were quite positive ($M = 1.4$, $SD = 1.5$). Participants in the confederate-negative condition perceived overall conversation ($M = -1.1$, $SD = 1.6$) and both message ($M = -1.5$, $SD = 1.5$) and sleep-related conversation ($M = -.6$, $SD = 2.1$) to indeed be negative. Participants in the confederate-positive condition provided positive perceptions of valence ($M = 1.3$, $SD = 1.4$), and strong, positive perceptions among of message-related

conversation ($M = .32$, $SD = 1.3$) and very positive perceptions of sleep-related conversation ($M = 2.2$, $SD = 2.2$).

Table 2.7
ANOVA Comparing Conversation Valence by Condition for Phase Two Experimental Chat Conversations – Real and Perceived (N = 301).

	Confed.- Natural		Confed.- Negative		Confed.- Positive		ANOVA	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>Sig.</i>
Perceived Conversation Valence (scale from -3, very negative, to 3, very positive)								
Perceived valence – Message	0.3	0.9	-1.5	1.5	0.3	1.3	41.1	<.001
Perceived Valence – Sleep	1.4	1.5	-0.6	2.1	2.2	2.2	39.8	<.001
<i>Overall Valence</i>	<i>0.9</i>	<i>1.0</i>	<i>-1.1</i>	<i>1.6</i>	<i>1.3</i>	<i>1.4</i>	40.2	<.001

ANOVAs revealed that conversational responses differed significantly by condition for all conversation valence categories – real and perceived. Several pairwise comparisons of responses to valence across condition were statistically significant. Perceptions of valence varied significantly by condition $F(3, 212) = 40.2$, $p < .001$. Post hoc tests revealed that confederate-natural participants perceived conversation to be more positive than confederate-negative participants ($M = .9$ v. -1.1 , $p < .001$; Test 1 for RQ1) and participants in the negative condition perceived the conversation to be more negative than participants in the confederate-natural condition ($M = -1.1$ v. $M = .9$, $p < .001$; Test 1 for H2). I observed the same pattern of difference for measures of perceived message-related conversation and sleep-related conversation (all tests $p < .001$). In addition, post hoc results show participants in the positive condition perceived the conversation to be more positive than participants in the negative condition ($M = 1.3$ v $M = -1.1$,

$p < .001$), although participants in the confederate-positive condition was not significantly more positive than the confederate-natural condition ($M = 1.3$ v. $M = .9$, $p = .06$; Test 1 for H3).

Table 2.8 illustrates actual (LIWC-coded) conversation valence descriptive statistics. Both participants and confederates were been more positive in the confederate-natural condition (participant: $M = 5.0$, $SD = 3.8$, confederate: $M = 8.1$, $SD = 3.7$) than in the negative condition (participant: $M = .9$, $SD = 1.1$, confederate: $M = 2.8$, $SD = 2.0$). Both the confederate and participants offered more negative words in the confederate-negative condition (participant negative: $M = 4.0$, $SD = 2.2$, confederate: $M = 4.6$, $SD = 1.8$) than the confederate-natural condition (participant negative: $M = 0.9$, $SD = 1.1$, confederate: $M = 2.8$, $SD = 2.0$; Test 2 for RQ1). Also, participants provided more positive words in the confederate-positive condition (participant: $M = 3.6$, $SD = 1.9$, confederate: $M = 6.1$, $SD = 2.5$) than confederate-natural (participant positive: $M = 5.0$, $SD = 3.8$, confederate: $M = 8.1$, $SD = 3.7$). Finally, participants and confederates provided a high number of positive words in the confederate-positive condition (participant: $M = 8.6$, $SD = 4.1$, confederate: $M = 8.5$, $SD = 3.1$). With evidence that conversation in the confederate-natural condition was perceived to be positive ($M = .9$; Table 2.7) and participants provided an overall high number of positive words in the confederate-natural condition ($M = 5.0$) and low number of negative words ($M = .9$), providing initial evidence that post-exposure conversation with a confederate instructed to engage in natural conversation is more positive than negative in valence.

ANOVA revealed statistically significant differences between negative words uttered by participants $F(2, 197) = 35.5$, $p < .001$. Post hoc tests indicated that participants used more negative words in the negative induced condition than the confederate-natural condition ($M = 4.0$ v. $M = 0.9$, $p < .001$; Test 2 for H2), but no more so than the positive condition ($M = 4.0$ v. $M =$

3.6, $p = .40$). With two tests indicating that (a) participants perceived conversations to be more negative and that (b) objectively they used more negative words in the confederate-negative condition versus the confederate-natural condition, H2 receives full support.

ANOVAs revealed participant positive words varied significantly by condition $F(2, 197) = 38.8, p < .001$. Post hoc tests indicated that participants used more positive words in the confederate-natural condition than in the negative condition ($M = 5.0$ v. $M = 3.6, p < .001$). In addition, participants used more positive comments in the positive condition than in the negative condition ($M = 8.6$ v $M = 3.6, p < .001$). However, participants did not use significantly more positive words in the positive condition versus the confederate-natural condition ($M = 8.6$ v. $M = 5.0, p = .54$; Test 2 for H3). Therefore, although perceptions were not significantly more positive in the confederate-positive than confederate-natural conditions (Test 1), participants did use more positive words in the confederate-positive condition than the confederate-natural (Test 2). I thus conclude that H3 receives partial support.

Table 2.8
Actual (LIWC Coded) Conversation Valence by Condition (N = 301).

	Confed.- Natural		Confed.- Negative		Confed.- Positive			
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>Sig.</i>
Actual (LIWC Coded) Conversation Valence								
Actual – Participant Negative	0.9	1.1	4.0	2.2	3.6	2.8	35.5	<.001
Actual – Participant Positive	5.0	3.8	3.6	1.9	8.6	4.1	38.8	<.001
Actual – Confederate Negative	2.8	2.0	4.6	1.8	3.3	1.7	15.9	<.001
Actual – Confederate Positive	8.1	3.7	6.1	2.5	8.5	3.1	11.3	<.001

Results from ANOVAs further show that confederate negative comments varied by condition, $F(2, 197) = 15.9, p < .001$. As expected based on the experimental manipulation, confederates uttered more negative words ($M = 4.6$) than in both the confederate-natural ($M = 2.8$) and the positive conditions ($M = 3.3$, both $ps < .001$). ANOVA also indicated that positive words from confederates varied significantly by condition $F(2, 197) = 11.3, p < .001$. Post hoc tests revealed that confederates used more positive words in the confederate-positive than confederate-negative conditions ($M = 8.5$ v. $M = 6.1, p < .001$) but not significantly more positive comments in the confederate-positive than the confederate-natural condition ($M = 8.5$ v. $M = 8.1, p = .45$).

Conversation Valence and Behavioral Intentions (Hypotheses 4A and B)

Table 2.9 illustrates behavioral beliefs from the IMBP (Fishbein & Ajzen, 2009) by experimentally induced condition. Attitudes were generally favorable toward getting between 7 and 8 hours of sleep at night in this college student sample. Mean attitude toward sleep was positive ($M = 1.33$). While there was a trend toward positive – induced condition participants having more positive attitudes toward sleep than negative – induced conditions ($M = 1.36$ vs. $M = .83$), this difference was not significantly different ($p = .103$). Positive overall social norm beliefs ($M = 1.33$) suggest students largely believed that their peers were getting between 7 and 8 hours of sleep at night. Perceived behavioral control beliefs were overall relatively high ($M = 1.93$), suggesting participants generally believed they were able to get between 7 and 8 hours of sleep at night. Participants in the positive – induced condition reported overall positive control beliefs. There was a trend toward beliefs among positive – induced condition participants being

higher than negative – induced condition participants ($M = 1.99$ vs. $M = 1.75$), but this difference was not statistically significant ($p = .336$).

Table 2.9
IMBP Constructs by Condition (N = 301).

	Overall		Control Condition		Confed.- Natural		Confed.- Negative		Confed.- Positive		ANOVA	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>P</i>
IMBP Constructs (scale from -3, very negative, to 3, very positive)												
Attitude ($\alpha = .95$)	1.33	1.8	1.56	1.6	1.56	1.5	0.83	2.0	1.36	2.0	2.7	0.103
Norms ($\alpha = .83$)	1.69	1.0	1.65	1.1	1.55	0.9	1.71	1.0	1.81	1.0	0.4	0.540
Control ($\alpha = .87$)	1.93	1.5	2.05	1.5	1.88	1.5	1.75	1.7	1.99	1.4	0.9	0.336
Intention ($\alpha = .92$)	1.13	1.5	1.04	1.5	1.29	1.6	0.82	1.7	1.35	1.4	4.6	0.034

Intentions overall in the study sample were positive ($M = 1.33$), indicating participants were favorably disposed to the idea of getting 7 to 8 hours of sleep at night. There was also statistically significant difference in behavioral intentions by randomized condition ($F(1,151) = 4.6$, $p < .05$). Post hoc tests revealed that intentions were significantly higher in the confederate-positive condition than the confederate-negative condition ($M = 1.35$ v. $M = .82$, $p < .001$). Intentions in the confederate-positive and confederate-negative conditions were not statistically significantly higher or lower than the confederate-natural (control) condition (H4A and H4B were thus not supported).

Table 2.10 displays OLS regression results from a regression using perceived and objective measures of conversation valence (both self report and actual LIWC coded valence) to predict behavioral intention. These results show perceived positive conversation was a strong, positive predictor of behavioral intention ($b = .2, p = .002$). In addition, actual participant positive words positively predicted behavioral intentions ($b = .16, p = .027$).

Table 2.10
OLS Regression of Conversation Valence on Intention (N = 301).

	<i>Behavioral Intention</i>	
	<i>B</i>	<i>p</i>
Conversation Variables –Perceived and Objective		
Chat Valence –Perceived	0.23	0.002
Chat Valence –Actual – Participant Negative	0.11	0.150
Chat Valence –Actual – Participant Positive	0.16	0.027
Chat Valence –Actual – Confederate Negative	-0.05	0.520
Chat Valence –Actual – Confederate Positive	-0.05	0.473

To reach a broader understanding of the relationship between conversation valence and behavioral intention, I explored a variety of potential mediators of the relationship. Several conditions must hold to provide evidence that a variable mediates a relationship between an independent and dependent variable (see Baron & Kenny, 1986, for a basic treatment of these principles). Specifically, Baron and Kenny argue criteria for mediation include (a) a significant relationship between independent and dependent variables, (b) a significant relationship between the potential mediator and the outcome variable, and (c) when the mediator variable is included

in the same regression model as this primary regression equation between the independent and dependent variable, any significance observed for the primary independent variable (in this case, experimentally induced condition) is reduced or drops out entirely (becomes non-significant).

Earlier in the chapter, I offered evidence that several variables, including perceived message effectiveness, psychological reactance, and positive emotion from the message (in Table 2.6) and both perceived and actual (participant) conversation valence (in Table 2.10), varied significantly from one condition to the next. I tested these variables as potential mediators of the conversation valence – behavioral intention relationship using the standards put forth by Baron and Kenny (1986). In the first procedure, the significant variables observed in Table 2.10 were retained (perceived chat valence and actual participant positive valence) then joined in several different regressions by every possible combination of the three potential mediators in one regression equation. None of the potential mediators from Table 2.6 were even marginally significant ($p = .10$) except positive emotion ($p < .05$). I thus performed a hierarchical regression analysis where randomized condition dummy variables were entered in the first step, and then joined in the second by the significant predictors of intention (perceived chat valence, actual participant positive valence, and positive emotion).

Table 2.11 illustrates the two-step regression model considering the potential mediation of experimental condition and behavioral intention to get healthy sleep. Consistent with the requirements for mediation, the relationship between experimentally induced condition and behavioral intention that was significant in the first step but becomes non-significant (and even changes signs) after the mediation variables are added. Specifically, randomized condition variables are either marginally significant (confederate-natural v. negative: $B = .15$, $p = .084$) or statistically significant (positive v. negative: $B = .19$, $p = .026$) in Model 1. When the additional

mediators are included, condition variables lose their significance (confederate-natural v. negative $B = -.04$, $p = .664$; positive v. negative $B = -.14$, $p = .206$), and the mediator variables are significant (chat valence –perceived $B = .24$, $p = .010$, chat valence – actual – participant $B = .19$, $p = .025$, positive emotion $B = .15$, $p = .043$). Taken together, this provides evidence that the observed effect of positive versus negative conversation shaping intentions is driven by respondent perceptions of positive conversation, participant actual positive words, and the experience of positive emotion in the context of message exposure.

Table 2.11
Hierarchical Regression Models to Explore Mediating Variables (N = 301).

Variable	<i>Model 1</i>		<i>Model 2</i>	
	<i>B</i>	<i>p</i>	<i>B</i>	<i>p</i>
Condition: Confederate-Natural v. Confederate-Negative	0.15	0.084	-0.04	0.664
Condition: Confederate-Positive v. Confederate-Negative	0.19	0.026	-0.14	0.206
Conversation Valence–Perceived			0.24	0.010
Conversation Valence – Participant Positive			0.19	0.025
Positive Emotion			0.15	0.043
R ²	0.03		0.13	
F for change in R ² (p-value)	2.77 (0.065)		5.42 (<.001)	

General Discussion

Conversations pattern our waking lives, and emerging evidence suggests these social processes are important to consider in health campaigns. Specifically, whether health campaign or promotional messages are discussed in conversation may factor into their persuasive potential, or lack thereof. Recent scholarship advanced the notion of ‘conversational valence’ (Southwell & Yzer, 2009), distinguishing between positive (congruent with the campaign’s objective) or negative (incongruent with the campaign’s objective) talk. This study used random assignment and confederate induced conversation to better understand how different types of conversation shape intentions to engage in healthy sleep behavior.

Findings indicate that students generally held positive intentions to get adequate sleep. However, behavioral intention to sleep also varied significantly by the valence of post-conversation conversations about the message. Post-hoc tests revealed the difference was driven in large measure by the difference between participants exposed to confederate-negative conversation and those exposed to confederate-positive conversation. Participants in the confederate-positive conversation condition reported significantly higher intentions to sleep than the confederate-negative conversation condition. OLS regression results found perceptions of conversation valence, actual positive comments from the participant, and positive emotions positively predicted behavioral intention to get healthy sleep and appeared to mediate the observed relationships between manipulated conversational valence and intentions.

Methodologically, this study utilized both qualitative (to inform study design) and quantitative methods (which permit strong causal inferences) about the consequences of positive- and confederate-negative conversation in shaping message effects. The field has often relied on observational evidence in making claims that different conversation matters differentially in

shaping the effects of health promotion messages and campaigns. This study charged a new course for research on conversations about health by employing confederates to strategically sway the conversation to be either positive or negative. The use of random assignment and confederate-induced valence allowed the current dissertation to more cleanly examine the impact of positive and negative conversation valence. In so doing, this study advanced the field of conversation about health topics in a new direction beyond mere observational evidence for conversation effects, and one that offers a foundation for future research in this area.

Results from this study show a significant relationship between positive versus negative conversation and behavioral intention to engage in healthy sleep. Although past studies have focused on the deleterious nature negative comments can have (with respect to a message or the behavior targeted in the message; David et al., 2006), this study emphasizes that conversation that is positive matters as well. Specifically, this study found that the perception that the conversation was positive, and actual positive words made by the participant drive the main effect observed of positive versus negative conversation and study outcomes. Furthermore, results found positive emotion to mediate the conversation – intention relationship. Therefore, the perception of positive conversation, actual participant generated positive comments, and the experiences of positive emotion after message exposure were each behind the relationship between valence and intention.

Conversation is a complex, complicated process where individuals engage in discussion about a number of topics in a number of ways. Online conversation clients and chat platforms provide a useful backdrop, allowing researchers access to actual conversation transcripts for analysis. This study collected qualitative focus group feedback from participant reactions to the sleep video, and then evaluated conversations following the message and perceptions of how

different topics were discussed as well as actual conversations. This chapter sought to advance a method for identifying the causal impact of different types of conversations on health promotion messages. It documents the compelling, consequential nature of positive conversation in the context of a campaign, both with respect to the message and the behavior addressed.

Limitations and Future Work

This study offers empirical and methodological contributions, but is not without limitations. Care was taken in the current study to make use of an online chat platform for the experimental conversations that is frequently used by college-aged students. In addition, care was taken to draft transcripts for the confederates to use that employed quotes from reactions actual college students provided in the focus groups. While conversations occurred on a popular chat platform, and comments confederates provided were inspired by actual college student statements, conversations nevertheless took place between a trained confederate and participant and it stands to reason the study sacrificed realism in that respect. However, while the online chat platform is one that is frequently used by college students, it would be rare certainly to chat with a stranger online, even if the platform itself is familiar. Thus the method sacrificed an element of external validity in favor of strong internal validity to permit causal inference. Another limitation in this study is that the conversation was text-only, and begs the question as to how outcomes may have been different if the conversations were in person, or included video capability.

It should be noted that several message and chat reaction variables were systematically different from one condition to the next. It would be fruitful to tease out how effectiveness perceptions, positive emotion, and conversation realism changed from one condition to the next. This type of analysis may illuminate why conversation enhanced campaign-related cognitions in

some cases (when participants commented positively about the message) but not in others (when participants commented negatively about the message).

Documenting the role of positive conversation in predicting behavioral intentions after viewing the health message suggests that conversation, when it can be positive about the message and its target, can be useful to campaign-based persuasion. Future work might expand and refine these findings by conducting similar research in different behavioral contexts, such as health messages promoting healthy exercise or nutrition. In addition, the importance of positive conversation for behavioral beliefs and intentions suggests that finding ways, either by designing messages that promote positive social sharing, or with perhaps engaging community leaders to discuss the importance of a health message with recipients following exposure might be effective ways to support behavior change in the context of a campaign. Conversation in response to a media message promoting an health as this study explored is a growing area of research, and a useful one for several literatures remind us that conversation about messages is common, and as this study and others show, these discussions are consequential. In addition to media motivated discussion, one additional avenue deserving of scholarly attention are the everyday contexts in which conversations about health behaviors and topics arise, and how these interactions relate to behavioral beliefs about the health topics discussed.

This research advances a novel approach to studying conversation in response to media messages promoting health behaviors, such as sleep. Drawing on a two-phase design, common responses to the video were collected with focus group discussion, and then used to manipulate positive or negative conversation. Interestingly, this study found the extent to which participants believed conversations were positive, or favorable, with regard to the topic of sleep and sleep promotional message, but also how positive the participants actually were in the conversation

predicted intentions to follow the message suggestion of getting more, healthy sleep. While conversation in a campaign or context of health message exposure is one context where this social interaction bears consequence for beliefs and behaviors, conversation is a common everyday activity. Exploring how conversation in everyday, informal conditions is another area deserving of attention in health communication and is the focus of the next chapter.

CHAPTER 3

VALIDATING MEASURES OF HEALTH-RELATED CONVERSATION CONTENT IN THE CONTEXT OF SLEEP BEHAVIOR AMONG COLLEGE STUDENTS

Health researchers have recently drawn attention to health-related conversations individuals engage in, and how these interactions matter for campaign and health persuasion efforts. Research on conversation in the context of health promotion campaign outcomes offers evidence that conversation can both support and hinder campaign success (David et al., 2006; Dunlop, Wakefield, & Kashima, 2008; Hendriks et al., 2012). Campaign, or media-motivated discussion is an important area of health promotion, but less attention has been paid to the role of everyday, health-related conversations individuals engage in. Conversations pattern our waking lives, and cover topics from politics and culture to health and wellness. Better understanding the everyday discussions may lend insight into why some behaviors are practiced and why some are not. This chapter explores everyday health discussions college students have about one specific behavior – sleep – and how these conversations and their unique qualities matter for decision-making and intentions.

While conversation can be motivated by receipt of a campaign message, conversation also is simply a fundamentally human behavior. Conversation serves several valuable functions. Through discussion with others, we reduce uncertainty about and better understand the world around us (Berger, 1987) and both provide and receive social support (Kawachi, Kennedy, & Glass, 1999). When it comes to health, research shows that people routinely engage in conversation with their social ties about topics relating to their health, both seek and provide information, and in many cases view these interactions as highly trustworthy and valuable (Fisher, Naumer, Durrance, Stromski, & Christiansen, 2005). Efforts to develop a more nuanced

understanding of when and how individuals talk about everyday health behaviors would appear to go a long way toward understanding when and why they matter for health decisions.

Health research has linked everyday conversations to the beliefs held about the behaviors discussed in a few specific contexts. For instance, research in doctor-patient literature has explored how conversation can reaffirm beliefs about behaviors or recommendations discussed in those interactions (Brown, Stewart, & Ryan, 2003; Cegala & Broz, 2003; Drew, Chatwin, & Collins, 2001). Another body of literature exploring communication among romantic partners has looked at such critical conversations as those about sexual history and their implications for safe sex practices (Cline, Johnson, & Freeman, 1992). Increasingly, research shows that not only can conversation frequently address matters of health, but those interactions bear important consequences for what people believe and how they behave.

One area of existing research on everyday conversation that applies to the current research is that which has examined conversations among college students about a variety of health behaviors. Research in this area of college-student conversations about health has examined topics such as sex, drugs, and drinking (e.g., Holman & Sillars, 2012; Perkins & Berkowitz, 1986; Real & Rimal, 2007). The accumulated evidence suggests that these social conversations can predict student beliefs about the behavior, particularly their perceptions about the extent to which these (in many cases high risk) behaviors are normative among their social peers. This literature further suggests that these normative beliefs influence the likelihood these students themselves will practice the risky behaviors discussed. It stands to reason conversations may be one very tangible source of social influence on individual health decision-making and behavior. Collectively, this evidence suggests that while conversation generated by a campaign is

an important factor, so too are everyday conversations and understanding their connections to decision-making and beliefs.

Despite this increased attention in the literature to conversation as a form of social influence, conversation measures used by researchers in some cases are highly simplistic, such as simple assessment of whether or not a respondent recalls that a conversation occurred (for similar critiques, see Eveland & Hively, 2009; Southwell & Yzer, 2009). Simplistic conceptualization and measurement of conversation ignores the fact that conversation is highly complex, situated process (Burlinson, Berger, Roloff, & Roskos-Ewoldsen, 2010b). Viewing conversation as a process to evaluate with one or two items on a survey precludes our ability to answer questions such as: How was the topic discussed; favorably or unfavorably? With whom were members of the population speaking, or with whom do they typically speak? How often do topics come up in conversation?

This study seeks to contribute to this growing body of research in health on the importance of talk by exploring and validating a more comprehensive approach to understanding the types of conversation we might expect in different health contexts. I seek to refine our understanding of how everyday conversation might be linked to not only social norm perceptions, but other beliefs about the health topic discussed.

Conceptualizing Health-Related Conversations

Talking to others is not only consequential, but is a multifaceted interchange where a number of topics can be covered in a number of ways. In this section, I outline several guiding assumptions that build on several critical developments in conversation research from relevant sub-fields that inform the conceptual and methodological approach of the current study. These include the following tenets: (1) health-related conversation is likely to cover many different

topics, (2) health-related conversation is likely to take place with different partners, and (3) health-related conversation can describe the behavior with differing valence (positive/favorable toward the behavior or negative/unfavorable toward it).

Health-Related Conversation Covers Many Different Topics

Conversation is a complex social process, and interpersonal conversations tend to cover a variety of topics in a variety of ways (Burlinson et al., 2010). Without means to understand the various ways conversation transpires, we are limited in our ability to understand its (potential) effects. Many studies have measured conversation about a message or in everyday contexts with a simple measure of frequency, such as “How often do you talk about X?” Measures of frequency alone fail to acknowledge the many possible topics within one broad subject area. For instance, with regard to sleep, individuals could talk about feeling states relating to sleep, such as being tired or alternatively energized; strategies to get better sleep; and/or personal experiences with sleep deprivation, like pulling an all-nighter.

Some recent research has indeed expanded on simple measures of frequency to identify specific topics within a broad category. For example, in their study on how parents communicate with their children about drug and alcohol use, one study identified common topics common conversation topics and then measured the frequency of each topic independently (Miller-Day & Kam, 2010). In this study, the authors distinguished between talk about rules, talk about rewards or punishments for abiding or breaking rules, and altogether avoiding the issue. This comprehensive assessment of different alcohol and drug use-related topics provided a more refined understanding of an otherwise broad behavioral context. Measuring different topics within the broad subject area of conversations college students have about sleep may explain more variance in outcomes than simply treating conversation monolithically.

Health-Related Conversation Takes Place with Different Partners

Conversations occur in our daily lives with a variety of individuals. It seems likely that information received in conversation may be differentially influential on our decisions and behaviors depending upon whom we talk to. Political communication research provides relevant examples of why acknowledging different conversation partners in research is important. One way political communication scholars differentiate between partners is distinguishing between political affiliations. For example, is conversation reported with members of a similar political orientation, or opposing? Evidence suggests that talking to “dangerous” others, or those with opposing political beliefs, actually exposes us to new viewpoints and can contribute to greater, more dense knowledge about politics (e.g., Eveland & Hively, 2009). Political communication research therefore offers strong evidence for the importance of considering the fact that conversation can take place with different types of people, and conversation with different types of partners bear different types of consequences and relationship to beliefs and outcomes.

In health communication, some research has indeed distinguished between conversation partners to better understand the frequency of conversation. In their study of conversations individuals have about multivitamins, Ferrara and colleagues asked participants to indicate conversation about multivitamins with different individuals, ranging from friends, family, doctors, and medical professionals (Ferrara et al., 2011). These authors found that discussion of multivitamins with friends, for example, were positively highly associated with multivitamin use, but less so with parents. In this case, identifying conversation partners, and including measurement of conversation across multiple social actors can lend a better view on the depth and nature of interactions. Measuring frequent topic-specific conversation partners appears to be

a useful approach for a more refined understanding of health-related conversation and its impact on beliefs and behaviors.

Health-Related Conversations Can Have Different Valence

Acknowledging that not all talk is equal, Southwell & Yzer (2009) proposed the concept of conversational valence. According to these authors, “positive” conversation is talk that supports the campaign, whereas “negative” conversation is talk that hinders the campaign objective. For instance, in a campaign addressing healthy sleep, conversation that might be termed ‘positive’ if they evaluate the message favorably, or the topic of sleep, otherwise ‘negative’ if they evaluate the message unfavorably or the topic of sleep. In essence, conversation valence refers to both the topic discussed (the message or health behavior targeted in the message) and the way in which those topics are discussed (favorably or unfavorably). Valence articulates the common-sense notion, albeit not always applied in health-talk measurement, that some conversation may be good for promoting healthy behavior while some may undermine healthy decisions.

Studies have begun to measure conversational valence and include these measures in studies examining health-related conversations and their implications for cognitions and behaviors. One study examining online chat conversations among teenagers after viewing an anti-marijuana campaign message found some participants engaged in discussion about the benefits of marijuana, or conversation that might be defined as “negative” in light of the campaign’s anti-drug goals (David et al., 2006). In another study examining face-to-face conversations among college students after watching an anti-binge drinking campaign, Hendriks and colleagues (2012) asked participants to respond to items assessing the perceived valence of a variety of topics (e.g., “How positively or negatively did you just speak about binge drinking”).

Although measuring conversation valence has begun proven to be important in understanding how conversation might help or hurt media-based behavior change efforts, scholars have operationalized valence differently in one study to the next.

In addition, while the concept of conversational valence is a useful one theoretically, there is still substantial conceptual and methodological ambiguity. Valence can refer to evaluation of a message (positive evaluation versus negative evaluation) or to the topic being discussed (either healthy behavior or unhealthy behavior). This construct can quickly become confusing, because positive and negative evaluations can occur for both healthy (or positive *health* behaviors) and unhealthy (or negative health behaviors). For example, David and colleagues (2006) found that participants *positively* valued a negative health behavior (marijuana smoking). By Southwell and Yzer's (2009) definition this construct would be negative talk, albeit conducted in positive / favorable terms. With the multiple applications of the terms positive and negative, valence can be a confusing concept for understanding other aspects of conversation than evaluation. This paper seeks to attenuate the confusion surrounding the measurement and conceptualization of conversation valence.

I argue that a clearer distinction in the topics discussed will aid in our understanding of valence in everyday health-related discussions. Specifically, I argue to distinguish between health-promoting talk and health-damaging talk, where health-promoting talk addresses healthy behaviors (e.g., "I love sleep!" or "I slept for a full 8 hours last night and feel great today") and health damaging talk discusses unhealthy behaviors (e.g., "Sleep is pretty low on my priority list, I usually get about 5 hours a night" or "I pulled an all-nighter last night"). For simplicity sake, these two types of talk from here on will be referred to simply as promoting talk and damaging

talk. The distinction proposed here offers clarity to the multiple uses of positive and negative in the field to date. Figure 3.1 offers a matrix for understanding the difference between.

Figure 3.1
Sample Quotes for Promoting and Damaging Talk.

Promoting Talk Sample Quotations	Damaging Talk Sample Quotations
<ul style="list-style-type: none">• “I love sleep!”• “I usually get about 8 hours of sleep.”• “I slept for 8 hours last night and feel great.”• “I went to bed early last night.”	<ul style="list-style-type: none">• “Sleep is pretty low on my priority list.”• “I usually get only 5 hours or so of sleep.”• “I pulled an all-nighter last night.”• “I was up so late last night I’m exhausted.”

In explicating promoting talk and damaging talk, this study seeks to advance our conceptual and methodological understanding of conversation. In so doing, this conceptualization provides a better understand of what is meant by “positive” and “negative” conversation, and ultimately, better understand if and how conversation bears consequence for health decision-making. We chose college students for this group is embedded in rich communication networks (Lenhart, 2009), and there is evidence that students talk frequently about their sleep, both how little and how much they get, with one another (Mednick et al., 2010).

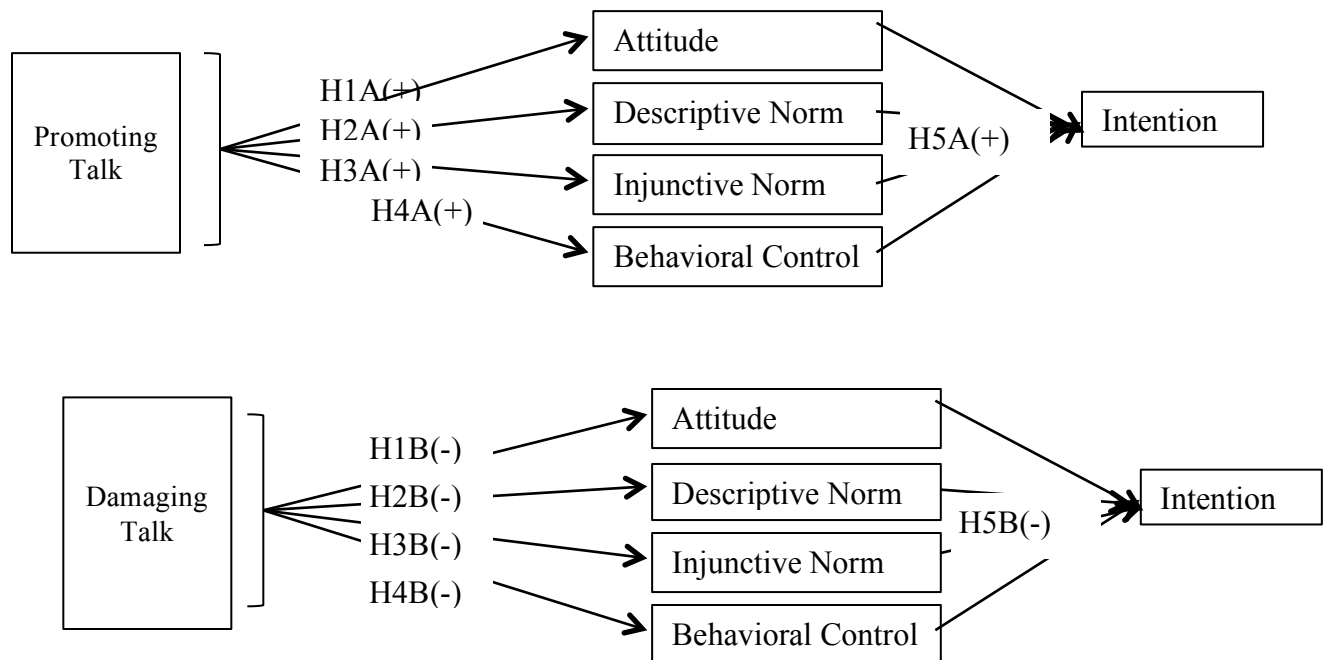
Using Health Behavior Theory to Understand Everyday Conversation

This study draws on behavioral theory to validate measures of promoting talk and damaging talk, We draw upon the behavioral beliefs outlined in the integrated model of behavioral prediction (IMBP; Fishbein & Ajzen, 2009), because this theory clearly and specifically outlines beliefs and pathways toward intentions and behaviors. In doing so, it

permits clear predictions about how different types of topics might differentially relate to beliefs and intentions. Analytic procedures will examine the relationship between the two types of talk and beliefs about the behavior, as outlined in the IMBP, to determine if promoting and damaging talk are related to behavioral beliefs in a manner as would be expected (i.e., promoting talk and beliefs positively related; damaging talk and behavioral beliefs negatively related). Specifically, we offer the below hypotheses, listed below, and displayed visually in 3.2.

The constructs put forth in the IMBP and our predictions about the relationships different types of conversation will have with these behavioral beliefs are outlined in sections below, outlined by construct.

Figure 3.2
Conceptual Model of Conversation Valence on IMBP Constructs.



Beliefs about the Outcomes of Performing a Behavior

Beliefs about the expected outcome of performing a behavior predict one's overall attitude toward a behavior (Feather, 1982). Expectations about the outcome of a behavior can be positive or negative; the more positive the expectation, the more positive the attitude toward the behavior and vice versa. Favorable outcome evaluations contribute to performance of a behavior, while unfavorable outcome evaluations hinder performance of a behavior (Fishbein & Ajzen, 2009). We hypothesize this pattern in a test of both nomological and discriminant validity – whether or not conversation content items predict classes of beliefs that they ought to (nomological) and whether or not they distinguish between desired and undesired outcome expectancies (discriminant).

H1A: Promoting talk will be positively associated with desired outcome expectancy beliefs about sleep.

H1B: Damaging talk will be positively associated with undesired outcome expectancy beliefs about sleep.

Normative Beliefs

Social influence also predicts intention, and is accounted for in the IMPB through the social norm construct. The IMBP accounts for a distinction often made previously between injunctive and descriptive normative influence (Rimal, Lapinski, Cook, & Real, 2005). Descriptive norms concern perceptions individuals have about what is being done (Kallgren, Reno, & Cialdini, 2000), while injunctive norms concern perceptions of what ought to be done (Cialdini, Kallgren, & Reno, 1991). Norms are inherently social phenomena (Kincaid, 2004).

It is most common for norms to be understood through observations of others in our social surroundings. Social cognitive theory illustrates how this is the case. According to social

cognitive theory, we observe role models in our environment, then behave ourselves in a similar fashion – or at least one inspired by the observation (Bandura, 1999). It is argued that behaviors that cannot be observed (termed “private,” like sexual behavior and sleep) are outside the realm of normative influence (Lapinski & Rimal, 2005). However, this paper takes the position that conversation is another source of valuable social and normative information. Through conversation individuals exchange feedback, opinions and views on what they believe and how they behave. Could it not stand to reason that under behavioral circumstances where observation is handicapped, such as the context of private behaviors, those other sources of normative information, such as discussing personal sleep habits or views on sleep might be more valuable? Here, hypotheses are offered for the relationship between conversation valence and normative beliefs:

H2A: Promoting talk will be positively associated with normative beliefs about sleep.

H2B: Damaging talk will be negatively associated with normative beliefs about sleep.

Control Beliefs

Control beliefs pertain to a person’s judgments about their ability to perform the behavior and/or environmental factors that promote or hinder its performance. Factors that increase control result in a sense of efficacy (Bandura, 1999), or a belief that performing the behavior is possible, and thereby predict intentions to perform the target behavior. Perceptions of control are likely influenced by conversation with others (Rogers, 2003). In the context of sleep, individuals are likely to learn about sleep strategies (successful or not) of others through conversation. If content-specific conversation measures proposed here are valid, they should predict control beliefs differently:

H3A: Promoting talk will be positively associated with control beliefs.

H3B: Damaging talk will be negatively associated with control beliefs.

Behavioral Intentions

According to the IMBP, the above constructs, including outcome expectations, normative beliefs, and control beliefs, each predict behavioral intention. In turn, intention is an important antecedent to behavior (Ajzen & Fishbein, 2000; Fishbein & Ajzen, 2009). In other words, intention serves as a strong predictor of whether or not the behavior will be performed. In this study we hypothesize promoting talk will be positively associated with outcome, norm, and control beliefs, while everyday damaging talk is hypothesized to be negatively associated with outcome, norm, and control beliefs. By extension, with positive outcome, norm, and control relationships, it stands to reason that promoting talk will be associated with intention, while damaging talk will be negatively associated with intention:

H4A: Promoting talk will be positively associated with behavioral intention.

H4B: Damaging talk will be negatively associated with behavioral intention.

Methods

This study utilized a multi-method approach to identify the topics and partners of sleep-related conversations and their patterns of association with behavior and outcomes in closed ended survey. In the elicitation study phase, I conducted in-depth focus group interviews with a convenience sample of the population (college undergraduates) to collect open-ended data on the conversations college students have about sleep. Items collected in the pilot phase were used to design the questionnaire for the population survey administered to a larger (but independent) sample of students from the same university as focus group participants. Both phases of this study and associated instruments were approved by the author's home Institutional Review Board. Data collection was conducted on the campus of a large university in the Northeast U.S.

Phase One – Focus Groups Identify Sleep-Related Everyday Topics

Focus group data was collected for the study described in Chapter 2 and the current study simultaneously. In other words, one focus group was used to understand reactions to the Chapter 2 sleep video, but also in the current research to better understand everyday discussions about sleep. Focus group methodology offered the ability to identify the most salient topics of conversation participants provided to then measure quantitatively using closed-ended survey (Downs & Hausenblas, 2005). Discussion in the focus groups was guided by the lead researcher, and followed the same open-ended interview protocol (Appendix 3), although this study made use of the questions specifically addressing everyday discussions about sleep.

To begin, I asked participants general questions about their sleep (“I’m curious about your general sleep habits. How much sleep do you get on a typical weeknight? What about weekends?”). These general introductory questions were selected to ease participants into the discussion, and help direct the students in their thinking toward the behavioral context (talk about sleep). The next set of questions directly asked about sleep-related conversations. First, to inquire about these conversations generally, students were asked “Does the topic of sleep ever come up in conversation?” Next, interested in the topics relating to sleep, students were asked, “What types of things are talked about when sleep comes up in conversation?” Then, to inquire about conversation partners, students were asked “Who do you talk to about sleep?” and “How do the things about sleep you discuss depend on who you are talking to?” Additional probes included, “How about the consequences of sleep– feeling tired or on the other hand well-rested – do those topics ever come up in conversation?” and “What are the events that keep you from getting sleep? Do those come up in conversation?”

I transcribed these interviews and then thematically analyzed their content. Analysis included a first reading where transcripts were simply read and no codes were applied, but the researcher became familiar with the focus group responses. Two rounds of coding followed the initial reading. In the first round, I assigned codes freely and in a manner to provide labels and categorizations for each quote as they came to mind. The final coding procedure included a focused coding approach where I synthesized codes assigned in the first round and refined them into a smaller set of codes. If a response was offered by more than half of study respondents, I selected it for inclusion in the phase two questionnaires.

Table 3.1 displays results from the qualitative focus groups offer guidance on common conversation partners, but also specific topics of conversation. College students reported friends being common discussants, as one respondent described, “I talk more about the negatives [about sleep] with my friends I guess because they experience the same thing” (Female, freshman), while also explaining more damaging talk with this partner than others. College students also reported parents to be common partners in discussions about sleep, as one student mentioned, “My parents are always like “Make sure you get enough sleep” and then if I talk to them I’ll be like “yeah I’ve been getting enough” even if I haven’t just so they won’t keep bugging me” (Male, junior). This quote suggests that parents can play a nagging role through conversation, checking in to see if their child is healthy in college, a role their child may expect and receive with encouraging feedback on their sleep, even if that is not the case.

Table 3.1
Focus Group Responses to Common Conversation Partners (N = 31).

<i>Component</i>	<i>Supporting Quotation</i>
Conversation Partners	
Friends	<ul style="list-style-type: none"> • “My boyfriend a lot to be honest, and my brother also because he’s an architect and it is a really common theme that they don’t sleep so I’m always concerned about his sleep” (Female, sophomore) • “I talk more about the negatives [about sleep] with my friends I guess because they experience the same thing” (Female, freshman) • “Yeah, definitely friends. They’re just more accessible” (Male, senior)
Conversation Partners	
Parents	<ul style="list-style-type: none"> • “My mom definitely like asks me if I’m sleeping ok “when she calls um I don’t know” (Male, sophomore) • “I would go with parents because my moms the kind of person who when she calls is like are you eating OK are you getting enough sleep?” (Female, sophomore) • “My parents are always like “Make sure you get enough sleep” and then if I talk to them I’ll be like “yeah I’ve been getting enough” even if I haven’t just so they won’t keep bugging me” (Male, junior)

Table 3.2 displays conversation topics observed within the focus groups. Results suggest comments from these qualitative interviews may be well described by a split between promoting talk topics and damaging talk. Specifically, college students reported promoting talk, such as asking or being asked about sleep (e.g., “A really common question people ask is “how did you sleep last night?”” because you know it is something everyone can relate to” Male, Junior), getting/receiving sleep tips (e.g., “In conversations with friends I tend to tell them what I do even when I’m dead tired I tend to read for at least an hour” Male, Junior), and simply talking about a good night sleep (e.g., “I’m also more of a positive person so when I do get a good night sleep I’ll be like “guys this is awesome I feel great I should do this all the time” Female, junior). On the other hand, topics that were categorized as damaging talk included talking about not getting

enough sleep (e.g., “Yeah with my friends all the time we’re always complaining about not having sleep” Female, sophomore), being tired during the day (e.g., “All the time, well a typically comment from a college students is “I’m so tired” Female, sophomore), and needing coffee to stay awake (e.g., “Uh I definitely have coffee drinking friends who are like ‘yeah I run on coffee’ or it’s always something caffeinated so there are energy drink people or mountain dew” Male, Junior).

Qualitative findings provided guidance on salient conversation partners and topics. The partners identified were almost exclusively parents and friends, and conversation topics identified from the coding were a list of eight topics relating to sleep. Only conversation topics that were mentioned by participants more than 50% of the time were included in the population phase two survey. Interestingly a near even split was observed between talk about healthy behavior topics (promoting talk) and unhealthy behavior topics (damaging talk).

Phase Two Population Survey

This study was conducted in the context of a larger, randomized experiment where participants also watched a short public service announcement video on sleep (control) and participated in a brief online chat activity before taking the survey that was swayed by a confederate to be positive or negative in nature (chat conditions; see Chapter 2). Although the current paper was embedded in the larger randomized experiment described in Chapter 2, results show that neither responses to promoting talk nor damaging talk varied by experimental condition. As a result, we do not control for randomized condition in the remainder of the paper because this variable cannot influence the relationship between promoting talk, damaging talk and outcomes when it is not associated with promoting talk or damaging talk. Demographic characteristics of the study sample can be found in Table 2.2.

Table 3.2
Focus Group Responses to Sleep-Related Topics (N = 31).

Component	Supporting Quotations
Promoting Conversation Topics	
1) Ask/be asked about sleep	<ul style="list-style-type: none"> • “A really common question people ask is “how did you sleep last night?” because you know it is something everyone can relate to (Male, Junior)
2) Offer / receive sleep advice	<ul style="list-style-type: none"> • “In conversations with friends I tend to tell them what I do even when I’m dead tired I tend to read for at least an hour it’s just a habit I gained from when I was little I was always told to read at least for 20 minutes” (Male, Junior)
3) Good sleep	<ul style="list-style-type: none"> • “I’m also more of a positive person so when I do get a good night sleep I’ll be like “guys this is awesome I feel great I should do this all the time it’s just not possible” so that’s how I would share that”
Damaging Conversation Topics	
1) Not enough sleep	<ul style="list-style-type: none"> • “Yeah with my friends all the time we’re always complaining about not having sleep” (Female, sophomore)
2) Being tired	<ul style="list-style-type: none"> • “All the time, well a typically comment from a college students is “I’m so tired” so generally you tend to ask your friends how much sleep they got to see who is worse off” (Male, sophomore)
3) Needing coffee to stay awake	<ul style="list-style-type: none"> • “Uh I definitely have coffee drinking friends who are like ‘yeah I run on coffee’” (Male, Junior)

Participants for this study were recruited via an online system where students enrolled in social science and information technology courses browsed, signed up for, and participated in studies for extra credit. Those who participated in the research were asked to provide informed consent before proceeding to complete the survey via the first webpage of the online survey. Participants were offered extra credit for their participation. The response categories were Likert scales, addressing (1) conversations individuals have with others about sleep, and (2) IMBP-related variables about healthy sleep behaviors (specifically, “sleeping for between 7 - 8 hours at night most nights per week”). The behavior was selected due to findings in the sleep medicine literature on the importance of 7 to 8 hours for full functioning and general health (National Sleep Foundation, 2008). Conversational measures were asked first in every survey, followed by the items measuring IMBP constructs (intentions, outcome expectancy, norms, and behavioral control). Questions were randomized within each block to avoid order effects

Measures – Conversation

We developed measures that assessed conversation partner, topic, and frequency of sleep-related talk. Focus groups identified common conversation patterns and topics of sleep-related conversations among college students (See Table 1.1 for conversation partners and Table 1.2 for topics of sleep-related conversations college students indicated in phase one focus groups).

The distinction between conversations about healthy sleep behaviors (promoting talk) and unhealthy sleep behaviors (damaging talk) proposed in this paper-received support in the qualitative data. Topics identified in phase one were nuanced, and nearly evenly split between health promoting and damaging sleep behaviors. By explicating precisely what is meant by positive and negative conversations through the lens of promoting talk and damaging talk, I seek

to offer a more refined, nuanced understanding of conversation and its potential implications for health decision-making.

Topic was measured comprehensively by assessing frequency of sub-topics within health behavior promoting (promoting talk) and health behavior damaging (damaging talk) topics. Questions asking participants to provide the frequency with which they talked about three health-promoting sleep behaviors assessed promoting talk. Specifically, participants were asked how often they 1) “ask or be asked about sleep, like ‘how did you sleep last night?’” 2) “talk about good sleep strategies,” and 3) “getting a good night sleep.” Similarly, questions asking participants to provide frequency of talk about health-damaging topics assessed damaging talk. Participants were asked how often they 1) “talk about not getting enough sleep,” 2) “talk about being tired,” and 3) “talk about needing coffee to get through the day.”

Table 3.3 displays responses to the conversation measures. Responses were collected on a scale from 1 (not at all) to 3 (several times per week) and 5 (almost everyday) for the two conversation partners identified in the focus group analysis, including parents and friends. Topic-specific scaled measures were created by summing volume of talk with parents with that of friends. Scaled measures were created for both promoting talk and damaging talk by taking the average of the total conversation reported for each of the three sub-topics. College student talk about sleep is frequent, and more often addresses health behavior damaging topics than health behavior promoting topics (damaging talk: $M = 7.11$, $SD = 1.8$ vs. promoting talk: $M = 6.15$, $SD = 1.9$; paired sample t-test $p < .001$).

Table 3.3
Descriptive Statistics for Conversation Topics Reported (Scale of 1 to 5).

	With Parents		With Friends		<i>Total</i>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Promoting Talk						
Ask/be asked about sleep	3.3	1.4	3.7	1.3	6.9	2.3
Talk about getting a good night's sleep	2.7	1.4	2.6	1.2	5.2	2.2
Give/receive tips or strategies on sleep	2.9	1.4	3.5	1.2	6.4	2.2
<i>Scaled Promoting Talk ($\alpha = .78$)</i>					6.2	1.9
Damaging Talk						
Talk about needing coffee to stay awake	3.3	1.5	4.2	1.2	7.5	2.3
Talk about not getting enough sleep	3.7	1.4	4.6	0.8	8.3	1.8
Talk about being tired	2.3	1.5	3.3	1.6	5.6	2.7
<i>Scaled Damaging Talk ($\alpha = .75$)</i>					7.1	1.9

Measures – IMBP Constructs

Behavioral beliefs about sleep (outcome expectancy, injunctive and subjective norm, perceived control) and intentions to engage in the target behavior (sleeping 7-8 hours on most nights) were developed using a two-study approach described elsewhere (Robbins & Niederdeppe, 2014); the current study reports on new data using the same IMBP measures. In this standard method for assessing IMBP measures, we included “indirect” measures of constructs outlined in the IMBP (outcome expectancy, descriptive norm, injunctive norm, and control beliefs as well as the direct measures of these constructs (attitude, social norm, and perceived behavioral control beliefs).

Table 3.4
Descriptive Characteristics of IMBP Behavioral Beliefs Variables.

Indirect Behavioral Beliefs	<i>M</i>	<i>SD</i>
Outcome Expectancy (N = 296)		
Enable me to focus	9.39	8.85
Enable me to think clearly	10.81	7.92
Contribute to my general health	10.16	8.06
Miss out on social events	-4.74	5.58
Less time to do things I want	-8.07	7.05
Not enough time to work	-8.96	7.80
<i>Average Outcome Expectancy</i>	<i>1.45</i>	<i>4.19</i>
Injunctive Norm (N = 295)		
Parents	12.32	6.64
Doctor	13.77	6.70
Professors	5.79	6.27
Friends	4.17	5.83
Other students	1.82	4.91
<i>Average Injunctive Norm</i>	<i>7.51</i>	<i>4.45</i>
Descriptive Norm (N = 296)		
Parents	5.17	8.94
Doctor	2.62	7.69
Professors	-3.52	6.28
Friends	2.30	5.91
Other students	-3.82	4.73
<i>Average Descriptive Norm</i>	<i>0.54</i>	<i>4.50</i>
Perceived Behavioral Control (N = 296)		
Having less stress	3.13	3.98
Efficient time management	5.88	8.00
Having a lot of social events	-2.82	8.82
Having a lot of work	-2.88	3.34
<i>Average Behavioral Control</i>	<i>0.84</i>	<i>3.48</i>

Table 3.4 shows responses to the indirect beliefs questions, assessing beliefs regarding outcome expectations, injunctive norm, descriptive norm, and perceived behavioral control. Outcome expectations were measured with six sleep-related expectancy beliefs (e.g., “my sleeping for between 7-8 hours at night most night per week will enable me to focus”) on 7-point scales from “unlikely” (1) to “neutral” (4) to “likely” (7). We also gauged the evaluation of each outcome, or strength (e.g., “my ability to focus is... undesirable (1), neutral (4), desirable (7)”). I recoded strength by subtracting four so that negative values indicate undesirable outcomes and positive values indicate desirable outcomes. To create a single composite score, we multiplied each belief by its corresponding evaluation, and then averaged these six items for a single measure of outcome expectancy ($M = 1.5$, $SD = 4.2$). The overall composite score was near the scale mid-point, indicating that students on average saw slightly more benefit than drawback to sleeping 7-8 hours per night.

Injunctive norm beliefs were examined by assessing the strength of norm perceptions and identification each of five specific social referents. I assessed the strength of beliefs about normative expectations (e.g., “my parents think I... should not (1), neutral (4), should (7)... sleep for between 7-8 hours at night most nights per week”) for five key referents for sleep behavior among college students elicited in prior research (Robbins & Niederdeppe, 2014). We recoded this variable so by subtracting four so that negative values indicate beliefs that referents think respondents should not sleep 7-8 hours per night while positive values indicate beliefs that referents think respondents should sleep 7-8 hours per night. I also gauged the motivation to comply with each referent (e.g., “when it comes to matters of health, I want to do what my parents think I should do”) using 7-point scales from “disagree” (1) to “neutral” (4) to “agree” (7). Referent-specific composite scores were obtained by computing the product of each referent

belief (level of agreement) and their motivation to comply with that referent (should not or should). Next, a single scale for injunctive norm was created by averaging the composite measures ($M = 7.51$, $SD = 4.45$).

Similar to injunctive norms, descriptive norm beliefs were examined by assessing the strength of norm perceptions and identification each of five specific social referents. I assessed perceived descriptive norms (e.g., “How probable or improbable are your parents sleeping for between 7-8 hours at night most nights per week?”) from the same five referents, using 7-point scales from “improbable” (1) to “neutral” (4) to “probable” (7). I also gauged strength of these beliefs by assessing identification with each normative referent (e.g., “when it comes to matters of health, how much do you want to be like your parents?”) using 7-point scales from “not at all” (1) to “neutral” (4) to “very much” (7). I recoded strength by subtracting four so that negative values indicate beliefs that referent behavior is not an important source of influence. Referent-specific composite scores were obtained by computing the product of each referent descriptive norm belief (probability of engaging in the behavior) and identification with that referent (not at all to very much). I calculated an overall composite score for all descriptive norm beliefs by summing the referent-specific composite scores. The overall composite score was near the scale mid-point ($M = .54$, $SD = 4.50$), indicating that students perceive others sleep for 7-8 hours on most nights per week.

Behavioral control beliefs were examined by collecting responses to two enablers of increased control (e.g., “having less stress would enable me to sleep for between 7-8 hours at nights most nights per week ...”) and two barriers that might reduce perceived control over the behavior (e.g., “having a lot of work to do would make it difficult for me to sleep for between 7-8 hours at nights most nights per week ...”), using 7-point scales from “disagree” (1) to

“neutral” (4) to “agree” (7). I recoded barrier beliefs by flipping the scale (so disagreement reflects higher values) and subtracting four so that negative values indicate beliefs that referents agree the item would serve as a barrier to them to sleeping 7-8 hours per night while positive values indicate beliefs that referents disagree that the item is a barrier. I also gauged the frequency with which students encountered each barrier (e.g., “I am stress-free most nights per week”) using the same 7-point scale of agreement. Barrier-specific composite scores were obtained by computing the product of each barrier (level of agreement) and whether or not they frequency encounter the barrier (level of agreement). Like the previous three IMBP constructs, I calculated an overall composite score for all control beliefs, summing the item-specific composite scores. The overall composite score was also near the scale midpoint ($M = .84$, $SD = 3.48$), indicating that students perceive themselves to be marginally in control over their sleep habits.

Table 3.5 displays direct predictors of intention as outlined in the IMBP include attitude, social norms, and perceived behavioral control. Attitude was measured directly on semantic differential scales using the question stem “If I spent 7-8 hours sleeping most nights in the next two weeks, it would be...” with semantic differential scales, such as extremely harmful (1) to extremely harmless (7), very negative (1) to very positive (7). All responses were recoded by subtracting four such that negative values indicate negative attitudes toward sleep, and positive values indicate positive attitudes toward sleep. These items were joined for a single measure of attitude with high reliability ($M = 1.33$, $SD = 1.8$, Cronbach’s $\alpha = .95$).

Table 3.5
Descriptive Characteristics of IMBP Behavior Constructs (scale from -3 to 3).

Behavioral Constructs	<i>M</i>	<i>SD</i>
Attitude ($\alpha = .95$)	1.33	1.84
Social Norms ($\alpha = .83$)	1.69	.99
Perceived Behavioral Control ($\alpha = .87$)	1.92	1.51
Behavioral Intention ($\alpha = .91$)	1.13	1.53

Social norms were measured using the direct items “Most people important to me would appreciate if I slept 7 – 8 hours most nights in the next two weeks,” “Most people important to me would be supportive of me....,” and “Most people who are important to me would accept if I” The responses options for these questions ranged from 1 (strongly disagree) to 7 (strongly agree), and were recoded by subtracting 4 so that a negative response indicated disagreement, while a positive response indicated agreement. Social norm items were averaged into a single scale with high reliability ($M = 1.7$, $SD = .99$, Cronbach’s $\alpha = .83$).

Behavioral control was measured directly with several items, including “If I tried to sleep 7 – 8 hours in the next two weeks I would succeed,” “.... I could do that,” and “...it would be very easy for me.” The responses options for these questions ranged from 1 (strongly disagree) to 7 (strongly agree), and were recoded by subtracting 4 so that a negative response indicated disagreement, while a positive response indicated agreement. The three behavioral control items were averaged to form a single scale with high reliability ($M = 1.9$, $SD = 1.51$, Cronbach’s $\alpha = .87$).

Intentions were measured with two items: “I intend to sleep for between 7-8 hours at night most nights of the week” (using a scale from “definitely don’t” (1) to “definitely do”) and “I plan to sleep for between 7-8 hours at night most nights of the week” (using a scale from “strongly disagree” (1) to “strongly agree” (7). These discrete measures were combined into a single scale of intention to perform the behavior with high reliability ($M = 1.13$, $SD = 1.53$, Cronbach’s $\alpha = .89$).

Analytic Approach

I performed all quantitative analyses in SPSS (version 22). I calculated descriptive statistics for the belief and conversation items. To understand relationships among beliefs, direct constructs, and conversations, I calculated correlation coefficients and ran OLS regression models. Specifically, I first performed bivariate correlations between individual composite belief items about sleep and measures of promoting talk as well as damaging talk. Next, I tested hypotheses 1A through 4B by using the results from the correlation, but also the OLS regression model. Specifically, I conducted two multiple regression models. In the first set of models, I regressed indirect behavioral beliefs about sleep (outcome expectancy, injunctive norm, descriptive norm, and behavioral control beliefs) on promoting talk and damaging talk respectively. Next, I regressed direct IMBP constructs (attitudes, social norms, and perceived behavioral control) on promoting talk and damaging talk. Finally, I performed a simple OLS to evaluate the relationship between promoting talk and damaging talk on behavioral intention to get 7 to 8 hours of sleep at night.

Results

Relationships among IMBP constructs and promoting versus damaging talk are illustrated in Table 3.6. Promoting talk was not significantly related to any outcome expectancy beliefs. In

addition, promoting talk was not significantly related to the direct measure of attitude. With no significant relationship between promoting talk and outcome expectations or attitude items, Hypothesis 1A receives no support. On the other hand, damaging talk was negatively related to 3 of 6 indirect outcome expectancy beliefs, including “Ability to think clearly” ($r = -.12$, $p = .042$), “Miss out on social events” ($r = -.20$, $p = .001$), and “Not enough time to work” ($r = -.15$, $p = .009$) and damaging talk was strongly negatively correlated to the overall outcome expectancy score ($r = -.21$, $p < .001$), but there was no significant relationship among damaging talk and the direct attitude measure. (Direct measures are displayed in Table 3.7). With several negative associations between damaging talk and indirect outcome expectation beliefs (partial support from one of the two main tests), there is mixed support for Hypothesis 1B.

Norms were measured indirectly as both descriptive and injunctive, and directly with the social norm construct. With one exception (parents, $r = .14$, $p = .014$), promoting talk was not significantly associated with specific injunctive norm beliefs or descriptive norm beliefs. In addition, there was no significant relationship observed between promoting talk and the direct social norm construct. With no evidence in two main tests, and only one sub-belief within one of the three tests having a significant relationship, Hypothesis 2A is rejected. Damaging talk was positively correlated with injunctive normative beliefs for parents ($r = .19$, $p = .001$) and other students ($r = .12$, $p = .036$) as well as the composite measure for injunctive norms ($r = .16$, $p = .005$). However, damaging talk is inversely correlated to descriptive norms for professors ($r = -.12$, $p = .033$). There is no significant relationship between the direct measure of norms and damaging talk. Observing evidence counter to the hypothesized relationship for several injunctive norm beliefs, and no majority of the sub-beliefs within indirect constructs, Hypothesis 2B is rejected.

Table 3.6
Bivariate Correlations Between IMBP Constructs and Promoting versus Damaging
Conversation (N = 301).

	Promoting Talk		Damaging Talk	
Indirect Behavioral Beliefs	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
Outcome Expectancy				
Enable me to focus	-0.11	0.269	-0.08	0.157
Enable me to think clearly	-0.10	0.210	-0.12	0.046
Contribute to my general health	-0.09	0.217	-0.07	0.221
Miss out on social events	0.01	0.924	-0.20	0.001
Less time to do things I want	0.07	0.052	-0.10	0.103
Not enough time to work	0.11	0.307	-0.15	0.009
<i>Average Outcome Expectancy</i>	0.03	0.748	-0.21	0.000
Injunctive Norm				
Parents	0.14	0.014	0.19	0.001
Doctor	0.03	0.619	0.11	0.059
Professors	0.08	0.162	0.09	0.111
Friends	0.08	0.169	0.08	0.185
Other students	0.09	0.118	0.12	0.036
<i>Average Injunctive Norm</i>	0.11	0.052	0.16	0.005
Descriptive Norm				
Parents	0.02	0.723	-0.12	0.043
Doctor	0.01	0.931	-0.04	0.529
Professors	-0.08	0.151	-0.12	0.033
Friends	0.06	0.308	0.04	0.455
Other students	-0.07	0.259	-0.11	0.060
<i>Average Descriptive Norm</i>	-0.01	0.833	-0.11	0.069
Perceived Behavioral Control				
Having less stress	-0.03	0.676	-0.05	0.406
Efficient time management	-0.04	0.500	-0.15	0.010
Having a lot of social events	-0.02	0.726	-0.10	0.076
Having a lot of work	-0.13	0.027	-0.15	0.010
<i>Average Behavioral Control</i>	-0.07	0.222	-0.20	0.001

Relationships among direct IMBP constructs and promoting versus damaging talk are illustrated in Table 3.7. No significant correlations among behavioral control beliefs and promoting talk were observed. Further, no significant relationship was observed between direct measures of perceived behavioral control and promoting talk, so Hypothesis 3A is rejected. On the other hand, there was a significant, inverse relationship observed in the correlation of damaging talk and indirect behavioral control beliefs “Sleeping for 7 to 8 hours at night will allow me to have efficient time management” ($r = -.15$, $p = .001$) and “Having a lot of work will keep me from sleeping 7 to 8 hours at night most nights per week” (recoded; $r = -.20$, $p = .010$). In addition, there was a significant relationship observed between the composite measures of indirect behavioral control beliefs ($r = -.20$, $p = .001$). Further still, there was a significant relationship observed among the direct perceived behavioral control measure and damaging talk ($r = -.28$, $p < .001$). With full support from one test, and a majority of indirect beliefs performing as hypothesized, these results provide general support for Hypothesis 3B.

Table 3.7
Bivariate Correlations Between Direct IMBP Constructs and Health Behavior Promoting versus Health Behavior Damaging Conversation (N = 301).

Behavioral Construct	Promoting Talk		Damaging Talk	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
Attitude ($\alpha = .95$)	0.02	0.786	-0.08	0.162
Social Norms ($\alpha = .83$)	0.07	0.250	-0.06	0.295
Perceived Behavioral Control ($\alpha = .87$)	-0.04	0.526	-0.28	0.000

Sleep-Related Beliefs and Health Promoting or Damaging Talk

Several regression models explore the relationship among IMBP constructs and the two different forms of talk (promoting talk and damaging talk). Table 3.8 illustrates that among the behavioral beliefs about sleep in the regression on promoting talk, only injunctive norm and promoting talk have a significant relationship. The standardized beta coefficient suggests a strong, positive relationship between promoting talk and injunctive norm beliefs ($b = .14$, $p = .017$). On the other hand, several significant beta coefficients were observed in the regression of behavioral beliefs on health damaging talk. Damaging talk predicts negative outcome expectations ($b = -.187$, $p = .005$) and the behavioral control beliefs ($b = -.16$, $p = .009$). Further, promoting talk predicts negative behavioral control using the direct model construct outlined in the IMBP ($b = -.3$, $p > .001$). Although counterintuitive, damaging talk positively predicts injunctive norms ($b = .20$, $p = .009$).

Table 3.8
Regression of OLS Constructs on Promoting versus Damaging Talk (N = 301).

Behavioral Construct	Promoting Talk		Damaging Talk	
	β	p	β	p
Outcome Expectancy – Indirect	0.00	0.939	-0.17	0.005
Injunctive Norm – Indirect	0.14	0.017	0.20	0.001
Descriptive Norm – Indirect	-0.02	0.813	-0.10	0.078
Behavioral Control – Indirect	-0.08	0.216	-0.16	0.009
<i>R-Square</i>	<i>.03</i>		<i>.11</i>	
Attitudes – Direct	0.01	0.868	-0.03	0.578
Social Norms – Direct	0.09	0.636	-0.33	0.588
Behavioral Control – Direct	-0.07	0.493	-0.30	<0.001
<i>R-Square</i>	<i>.09</i>		<i>.09</i>	

Finally, I performed OLS regression between conversation type and behavioral intention (Table 3.9). Results suggest there is no relationship between promoting talk and behavioral intentions, rejecting Hypothesis 4A. On the other hand, damaging talk is a statistically significant negative predictor of behavioral intentions to get healthy sleep ($b = -.19$, $p = .001$), offering full support for Hypothesis 4B.

Table 3.9
Standardized Regression Coefficients from OLS Regression of Composite IMBP
Constructs on Conversation.

	Promoting Talk		Damaging Talk	
	β	p	β	p
Behavioral Construct				
Behavioral Intention	.01	.838	-.19	.001

Discussion

This study contributes to a growing body of research on the measurement and potential effects of health-related conversation (Eveland & Hively, 2009; Holman & Sillars, 2012; Southwell & Yzer, 2009). The current study focused primarily on conversation content to develop new measures that distinguish between conversations about health-promoting behavior and health-damaging sleep behavior and attempt to establish the validity of these measures. Results suggest reported talk about health behavior damaging topics were negatively related to

health promoting beliefs, but this was not the case for reported talk about health behavior promoting topics.

The analysis revealed that participants commonly reported talk about sleep. I found evidence, albeit not entirely consistent across behavioral beliefs, of the discriminant validity for the measures of conversation content that distinguish between health promoting talk and damaging talk. Evidence of predictive validity was strong only for damaging talk. Measures of promoting talk and damaging talk had different patterns of association with beliefs such that damaging talk was negatively associated with outcome expectations and control beliefs about sleep, but also intention to sleep. On the other hand, promoting talk was positively associated with injunctive norm beliefs, but this was the only significant relationship among promoting talk and behavioral beliefs.

Although the evidence makes a good case for the discriminant validity of damaging talk measures, the fact that promoting talk did not matter at all was surprising. The pattern of associations (or lack thereof) observed could be understood in several ways. Results suggest talk about health-damaging topics appear more frequently than health promoting topics in this behavior context, so perhaps promoting talk simply does not happen enough in this context to have demonstrable connections to behavioral beliefs let alone intentions. Another possible explanation for the weaker findings and support for validity of promoting talk could be simply that promoting talk does not matter as much as damaging talk for behavioral beliefs and outcomes.

Here I entertain a variety of plausible explanations for the effectiveness of damaging talk in predicting beliefs in logical manner, but not promoting talk. The importance of sleep may be a societally ingrained belief such that when damaging talk countered these claims, the discussion

represented new information that was more likely to garner attention than discussion that simply reaffirmed existing beliefs. Alternatively, the greater evidence for damaging talk and its negative consequences for behavioral beliefs could be offered by looking to the population of study: college students. These individuals, literature reminds us, are prone to a desire for autonomy and rejecting authority (Diehlman et al., 1987). Perhaps these populations are therefore more fundamentally attuned to stimuli that break the mold, and challenge existing authority and epistemologies. Finally, the measures employed for assessing promoting talk may not have assessed topics that were simply not discussed frequently enough to detect their relationship to behavioral beliefs. These working explanations and considerations merit future research that will be discussed below.

Methodologically, this paper draws on classic two-phase approach (qualitative elicitation studies to identify salient topics, quantitative surveys to document their prevalence and impact) to developing valid, robust measures of key constructs (Ajzen & Fishbein, 2000). In a mixed methodology, two-study design, our focus groups illuminated the most common aspects of conversation, including topics relating to the behavior being study in the current study (sleep), common conversation partners, and frequency to then measure quantitatively in phase two. In addition to evidence of the success mixed methods and this two-study approach lend to developing valid measures, I also advance a new conceptual framework for conversation research that explicates the notions of valence in the literature to suggest positive conversations be modeled as those that discuss, with social others either online or in person, health-promoting behaviors (whatever that may be for the given behavior being discussed). This framework argues distinguishing between health promoting and health damaging types of conversation topics may

be an effective manner to conceptualize conversations, illuminating both the type of conversation and how each type may bear different consequences for behavior.

Overall, study results suggest the potential value of formative, qualitative work for each conversation context that identifies salient, specific topics of discussion within a broad topic like sleep. The study results found evidence for the nomological validity of damaging talk; these measures were associated with several behavioral beliefs they would be expected to. However, promoting talk measures did not hold up as well, and far less evidence was offered in the current study for their nomological validity. Valid measures are necessary to detect communication effects. Content-specific measures would thus seem to have potential utility for studies focused on understanding the effects of health-related conversations in and of themselves (Holman & Sillars, 2012; Miller-Day & Kam, 2010) or for understanding whether conversations mediate or moderate the effects of health communication campaigns, news coverage, or media portrayals (Southwell & Yzer, 2009).

Limitations and Future Work

Several study limitations should be mentioned. First, participants were all college students recruited and incentivized by extra credit. Certainly, some of the students could have been motivated simply to get credit without answering the questions thoughtfully. Future work should explore the utility of these measures using random sampling strategies and across a variety of study populations. Second, the current study made use of measures in the context of a larger randomized experiment where participants, in three of four conditions, watched a short video on sleep. Despite this limitation, the responses to promoting talk and damaging talk did not vary significantly from one condition to the next, offering support that although the items used in

this study were taken from a survey where participants did other activities than answer sleep-related belief and conversation questions.

The study's objective was to validate measures, not to make causal claims, but some forms of validation (i.e., predictive validity) require longitudinal data that were not available here. Third, I measured conversation, behavioral beliefs, and behavioral intentions through self-report, which likely introduced error (particularly in recalling the frequency of conversations). I used theory (the IMBP) to guide the selection and measurement of beliefs and intentions (Fishbein & Ajzen, 2009) but had to develop our own conversation content measures for the purposes of validation.

The field of health communication would benefit from more robust measures of conversation to understand the role of social interaction in understanding and predicting behavior. The measures of sleep-related conversation content offered here made a broad distinction between talk about health-promoting and health-damaging sleep behaviors. It stands to reason this broad distinction could apply to other behavioral domains. For instance, in the case of nutrition, conversation may well focus on health-promoting behavior patterns such as eating fruits and vegetables, or health-damaging behavior patterns such as eating high-sugar, high-sodium, or high-fat foods. Future research should test the validity of these measures in this or other behavior contexts.

An additional avenue for future study is to further refine knowledge about by considering evaluative tone used when discussing various topics. For instance, while health-promoting behaviors could be discussed, they could well be couched in a negative tone of voice (e.g., sarcasm or frustration), which might have different implications for behavior than discussion about health-promoting sleep behaviors in positive tone. Thus, evaluative tone could be a fruitful

future avenue for research to even better understand the relationship between conversation and health behavior beyond frequency and content.

Conclusion

Without effective measures, the field is fundamentally handicapped in our ability to understand conversation and the implications this omnipresent and consequential social behavior presents for behavioral beliefs and intentions. Distinguishing between health-promoting and health-damaging conversation may be a fruitful distinction, although the evidence presented in the current study suggests damaging talk to be dangerous for healthy behaviors, but the relationship between promoting talk and beliefs was less clear. Social influence can manifest from observation and conversation with others, but understanding these processes requires valid measures of each construct. This study sought to enhance our conceptual and empirical understanding in the field by examining the potential of content-specific conversation measures in the context of healthy sleep behavior.

CHAPTER 4

CONCLUSION

Social influences are well documented across the social sciences, and there is growing interest in conversation in the context of health decision-making but also in health campaign exposure and outcomes. Evidence collected to date on the role conversations play in everyday healthy choices, but also to the success or failure of health campaigns provides support conversation has consequences. Research on everyday discussions about health suggest that talk bears consequence for beliefs about the behavior (Holman & Sillars, 2012; Limaye et al., 2012; Miller-Day & Kam, 2010), and research on campaign-generated conversations suggests these interactions can direct the course of post-exposure outcomes. While some research has found conversation can support a campaign (Dunlop et al., 2008; Hendriks et al., 2013), other work has found it can hinder a campaign's objective (David et al., 2006).

Despite the growing attention to conversation as one potential form of tangible social influence on individual health decision-making, measures and methods used to understand conversations have been largely simplistic assessments of overall conversation frequency. As a field we lack a framework for understanding when and why individuals talk about health topics generally or after exposure to a campaign, and how these interpersonal processes predict healthy behaviors.

Other sub-fields within communication research have directed attention to conversation, such as that of interpersonal communication and computer-mediated communication. These areas are rich, and represent a large body of theory and research on the characteristics of communication in diverse contexts, as well as their outcomes (Burgoon, 1998; Burleson et al., 2010; Fiske & Taylor, 2013). In addition, fields of research such as political communication

have taken such efforts as identifying conversation partners and specific topics to better understand how individuals discuss politics, and the implications these political conversations present for cognitions and civic engagement (Eveland & Hutchens, 2013; Eveland & Scheufele, 2000). This research draws on interdisciplinary concepts and methods to offer one approach to understanding health-related conversations, specifically how college students talk about sleep and respond to sleep promotional messages in social settings.

This research both advances our conceptual and methodological tools for measuring and understanding conversation, one form of social influence that is gaining attention in health research. This research explores both everyday conversations college students have about sleep and those generated by a campaign message to get more sleep. The objective of this research is to advance our approach as a field to conversation research, particularly, our understanding of how conversations relate to our everyday cognitions about health but also our beliefs about behaviors targeted by health communication messages. College students are embedded in rich networks of social communication and influence (Dielman et al., 1987; Lenhart, 2009).

Unfortunately, social influences are one factor that can tip teenage and college student behavior in a riskier direction (Reyna & Farley, 2006). Ultimately, reaching a more comprehensive view of conversations college students have, we may better understand impediments to everyday health decision-making and increase the persuasive power of a campaign message directed to college audiences.

This dissertation examined message-prompted conversation and that in everyday contexts among college students relating to sleep. Employing mixed-method and multi-phase study design and methodology, this research identified salient reactions and responses from a sub-section of the ultimate population on such areas as reactions to the video that would be used in

experimental stimuli, or the general topics of conversation relating to sleep that emerge in the course of college life.

Methodologically, this dissertation took a multi-method approach to first understand different conversational reactions and tendencies in everyday life for use in quantities through open-ended focus groups, and then to quantitatively analyze the frequency and impact of these topics and partners using closed-ended surveys to gauge concepts and themes that emerged in qualitative research. Chapter 2 describes experimentally induced conversation valence, and explores the connections between different types of conversation and behavioral beliefs. To my knowledge, this is the first study to make use of confederates and random assignment to understand differential effects of conversation in this manner. Chapter 3 identifies common conversation topics relating to sleep, and then draws on survey methods to understand how different types of conversation relate differentially to behavioral beliefs about sleep. This approach drew inspiration from several studies that have taken a similarly comprehensive approach by eliciting feedback from participants about salient, common topics of conversation about sleep, and then follow up surveys to measures the prevalence of different types of talk (Holman & Sillars, 2012; Miller-Day & Kam, 2010). Evidence from these two pieces of research suggests this multi-method approach offers a deeper understanding of the connections among specific types of conversation and behavioral beliefs, while leaves some questions unanswered. Specifically, more research must be conducted to better understand health-promoting topics among college students, if they come up, and how they are discussed.

Results of this research contribute to the growing body of literature in health communication that conversation, however formal or informal, does bear consequence for our beliefs and behaviors. In the case of sleep message exposure, results showed that the way the

message and - behavior - were discussed with an online conversation partner mattered for evaluation of the message and behavioral outcomes. Perceived behavioral control was higher in the confederate-positive post-message conversation conditions than the negative or confederate-natural conversation conditions, and so too was behavioral intention to get an adequate amount of sleep. Most compelling, the study described in Chapter 2 found college student perceptions of the conversation valence predicted intention, and that positive comments elicited from the participant predicted behavioral intention to get healthy sleep.

Past research shows that conversational valence (the extent to which a conversation is positive or negative) matters for health message outcomes, but the research has been mixed. Some evidence has documented the deleterious impact negative conversation has on campaign outcomes (David et al., 2006), but other research has provided initial support for the importance of positive conversation for eliciting campaign outcomes, like favorable attitudes toward the campaign message (Hendriks et al., 20114). In very recent research, scholars explored how a distinction between perceived conversation valence and actual (computer coded) valence may illustrate when conversation helps – versus when it hurts – campaign outcomes (Hendriks, Putte, & Bruijn, 2015). Hendriks and her colleagues found that while perceived and actual conversation valence are correlated, only perceived positive conversation valence predicts study outcomes. Consistent with emerging directions in health-related conversation and campaign exposure literatures, this study found the strong, positive impact that discussion that is favorable about the campaign target (in this case sleep) and the message are strong, positive predictors of behavioral intention to comply with the message.

Chapter 2 provides an additional contribution to the literature. The results of this study show that conversation matters in the context of health message exposure, but positive

perceptions and actual (objective) positive comments drive the observed relationship between conversation and study outcomes. In addition to these two mediators, the results of Study 1 suggest that the experience of positive emotion in the context of message exposure also mediates the conversation – intention relationship. This finding contributes to the area of the literature that has explored message characteristics predictive of intentions to talk about a message.

Specifically, this literature has explored negative emotion and narrative as message formats predictive of post-exposure conversation (Dunlop et al., 2008). The findings of this dissertation suggest the opposite - that it is positive emotion that matters in terms of message outcomes, and more than simply motivating post-exposure conversation, positive emotion here was found to mediate the conversation – intention relationship, and is thus responsible for the observation of conversation being consequential for post-message intentions.

In the study described in Chapter 3 examining everyday conversations about sleep, results suggest that talk about sleep is common, and distinguishing between different types of talk in everyday context illustrates different patterns of association between talk and decision-making about sleep. But specifically, talking about health behavior damaging topics, like feeling tired or needing coffee to get through the day, were associated in a logical fashion with beliefs about sleep. Specifically, these health-damaging conversations were strong, negative predictors of individual perceptions of control over the behavior. In addition, regression results reveal health-damaging discussion to be highly, negatively related to behavioral intentions to sleep. On the other hand, measures of promoting talk did not perform as well. promoting talk predicted only positive injunctive norm beliefs, or perceptions that sleep is an acceptable, and expected behavior. More research must be conducted to better understand health-promoting topics, when they come up, and how they relate to behavioral intentions and beliefs.

On the other hand, the survey exploring everyday discussions about sleep-related topics endeavored to advance an emerging approach to measuring everyday talk. Drawing upon past research that was similarly comprehensive in its examination of such conversation contexts as political conversation (Eveland & Hively, 2009) and conversations among parents and children about drinking (Miller-Day & Kam, 2010), this research validated a two-study approach where common topics were identified, then assessed in closed ended study. The field has begun to conceptualize and measure different types of conversation, and this study sought to advance one additional conceptualization, which includes a distinction between talk about health behavior promoting topics (such as, in the case of sleep, feeling well rested) verses talk about health damaging topics (such as, in the case of sleep, feeling exhausted or staying up too late). Results suggest behavioral beliefs were, in many cases, associated negatively with health-damaging conversations. However, there were very few significant relationships between beliefs about sleep and health-promoting conversation, suggesting additional work may be necessary to better understand health-promoting topics, how they are discussed, and what their connections are – if any – to behavioral beliefs.

Part of this research explored online socially mediated conversations college students have following exposure to a message about the importance of good sleep habits. Examining health message responses online is a pressing area for scholarship, for these online social technologies such as Twitter, Facebook, and YouTube, are increasingly used as distribution channels for messages. These platforms hold promise for serving as a stage where health practitioners and communicators can reach a larger population than ever before (Mangold & Faulds, 2009). One of the defining characteristics of these platforms is that they offer complete control to the user, allowing anyone to comment in any fashion they desire, leaving the campaign

designer or health promotion practitioner less control than in traditional mass media-based health persuasion (Vollmer & Precourt, 2008). However, evidence from here and elsewhere suggests conversation online can both help or hurt health message persuasion (David et al., 2006; Helme et al., 2011). Social media present the ability to diffuse messages with greater ease than ever before with the proliferation of sharing and Tweeting of messages and information.

Unfortunately, these platforms also allow the audience to take over control of the message and information, adding their own comments, angles, and perspectives as they process, and perhaps themselves disseminate content. These factors underscore the need, now more than ever, to understand how conversation about messages and health topics that occurs online may shape the ultimate impact of health messages and broader health promotion campaigns.

This dissertation is not without limitations. Several findings appear to be somewhat contradictory. Behavior theory argues that constructs like attitude, norm beliefs, and control perceptions predict intention (Fishbein & Ajzen, 2009), but this study instead found a direct relationship with intention but not its predictors (attitude, norm, or control). It is relatively surprising to see distal model constructs not vary, but then intention vary in such a significant manner as they did in this study. Explanations can be offered for why this may be the case. For instance, perhaps conversation is a potent source of persuasive information that directly impacts intentions while bypassing distal constructs and beliefs like attitudes or control beliefs. The IMBP is one model for understanding behavior that models individually held cognitions as predictive of intention, and intention of behavior. It stands to reason that different messages may impact different constructs in the model, either the cognitions outlined in the model (attitudes, norms, or control) or have a direct impact on intention or perhaps even behavior.

A recent meta analysis examined studies that manipulate message form (e.g., statistical evidence or narrative) and their impact on behavioral intention, or beliefs that predict intention (Zebregs, van den Putte, Neijens, & de Graaf, 2014). The results of the meta analysis found that some messages were better able to directly impact intention, namely statistical evidence, while other forms like narrative had more impact on discrete behavioral beliefs than the more proximal measure of intention. Authors conjecture that statistical messages more commonly explain why health behaviors are critical, while narrative does not always, and these fundamental differences could be why statistical messages have more direct impact on intention while narrative achieves traction on distal constructs. Perhaps because conversation, in a manner similar to statistical evidence, is a social process where individuals exchange information and perhaps the “why” behind behaving a certain way, such as getting healthy sleep, that conversation is able to achieve direct impact on behavioral intention and this study observed as such with no significant relationship to behavioral beliefs. This remains a topic for further study.

In the study examining everyday conversations, there were few patterns of predicted relationships between model constructs and health promoting talk, but a relatively stable pattern of significant and negative relationships between health damaging talk and IMBP model constructs. Nevertheless, this research offers initial evidence for one comprehensive way to move, as a field, toward refined understanding of conversation whereas past efforts have treated this complex process as a one-dimensional construct. For instance, much research on conversation about health topics or behaviors has simply asked, “How often have our discussed...,” without assessing important dimensions of talk like partner, topic, and valence (overall health promoting nature or health damaging nature of behaviors or topics).

In offering a broader, more nuanced assessment of conversation in two ways – in response to health messages and in everyday discussion contexts – this study advances our methodological and conceptual understanding of this complex process and how its different treatment of health topics matters for individual beliefs about the topics. This dissertation sought to understand how conversation about health and messages generated by health professionals or in everyday discussion matters for our beliefs and fundamental perceptions about behaviors that are important to our health. Ultimately, this research has uncovered one important social interaction that bears consequence for population health, and illuminates why we believe the things we do, and perhaps the way we behave the way we do as well. From the evidence presented here, conversation does matter for what we believe and how we behave, and the field would benefit from increased attention to the role played by conversation in shaping health beliefs and behaviors.

APPENDICIES

APPENDIX 1: FOCUS GROUP PROTOCOL

Question

1. I'm curious about your general sleep habits in general.
 - a. How much sleep do you get on a weeknight during the school year?
 - b. How much sleep do you typically get on a weekend during the school year?
 2. Do you think good sleep habits are within your grasp, or do you struggle to get adequate sleep at night?
 - a. PROBE: Why do you think this is the case?
 3. Now, I'm curious about the way sleep might come up in conversation. Does this ever happen?
 - a. PROBE: What types of things do you talk about?
 - b. PROBE: Do healthy topics, like getting adequate sleep come up? How do you talk about that?
 - c. PROBE: Do unhealthy topics come up, like pulling all nighters? How is that talked about?
 4. Who are the people you might talk to about sleep?
 - a. PROBE: What about your friends, do you ever talk about sleep, or things that have to do with sleep like needing coffee to stay awake?
 - b. PROBE: What about other people, like parents or professors, do you ever talk to them about sleep?
 5. Now, think about the conversations you typically have about sleep, what types of things or events cause those discussions to come up?
 - a. PROBE: For instance, is there a time of day or an event happening that would prompt you to discuss sleep?
- [The researcher gathers participants around a computer screen to watch the sleep video].*
6. What do you think about the video you just saw?
 - a. What did you like about the video?
 - b. What did you dislike about the video, or think was bad?
-

-
7. What do you think about the speaker in the video you just saw?
- c. How trustworthy would you say the speaker is?
 - d. How credible would you say the speaker is?
 - e. Do you have anything else you want to share about your reactions or ideas after watching the video?
8. Is there anything else about the video, sleep, or the conversations you have about sleep with others before we finish the focus group?
-

APPENDIX 2: IRB APPROVAL LETTER PHASE ONE



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Institutional Review Board for Human Participants

TRIENNIAL PROTOCOL APPROVAL- NO FEDERAL FUNDS

To: Rebecca Robbins
From: Carol Devine, IRB Chairperson *Carol M. Devine*
Protocol ID#: 1406004762
Protocol Title: The Role of Socially Mediated Conversation in Shaping Health Decisions among College Students
Approval Date: July 08, 2014
Expiration Date: July 07, 2017

Cornell University's Institutional Review Board for Human Participants (IRB) has reviewed and approved the inclusion of human participants in the research activities described in the protocol referenced above.

Please note the following:

- Conditional approval: Phase I only (Focus Groups), please note: parental permission for this minimal risk phase can be waived for participants aged 17 that are enrolled in college.

Special Conditions for Triennial Approval of this Protocol: This protocol was granted approval for three years until **July 07, 2017** as it does not involve federal funding and is therefore eligible for Triennial review under the IRB policy #21 (www.irb.cornell.edu/policy). As Principal Investigator for this project, you are responsible for informing the IRB and seeking re-review if at any point during the course of this project, Federal funds may be used to support any part of it. Failure to seek timely review and approval could result in an inability to use research data for the purposes of the Federal grant. Please refer to IRB policy #21 (www.irb.cornell.edu/policy) for more information.

The following personnel are approved to perform research activities on this protocol:

- Rebecca Robbins
- Jeffrey Niederdeppe

This approval by the IRB means that human participants can be included in this research. However, there may be additional university and local policies that apply before research activities can begin under this protocol. It is the investigator's responsibility to ensure these requirements are also met.

APPENDIX 3: IRB APPROVAL LETTER PHASE TWO

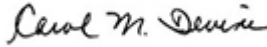


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NOTICE OF EXPEDITED AMENDMENT APPROVAL

To: Rebecca Robbins
From: Carol Devine, IRB Chairperson 
Protocol ID#: 1406004762
Protocol Title: The Role of Socially Mediated Conversation in Shaping Health Decisions among College Students
Approval Date: September 04, 2014
Expiration Date: July 07, 2017

Cornell University's Institutional Review Board for Human Participants (IRB) has reviewed and approved the following change(s)/modification(s) to the previously approved protocol referenced above:

Please note the following:

- Amendment to change the study population and add Phase II study instruments.

This approval shall remain in effect until **July 07, 2017**.

If you requested modifications to consent form(s), please use the attached revised/new consent form for any future subject enrollment.

If you submitted revised/final versions of interview guides, questionnaires, standard operating procedures, or any other research materials, you have approval to use those materials.

All other study procedures/instruments are to remain unchanged.

The following personnel are approved to perform research activities on this protocol:

- Rebecca Robbins
- Jeffrey Niederdeppe

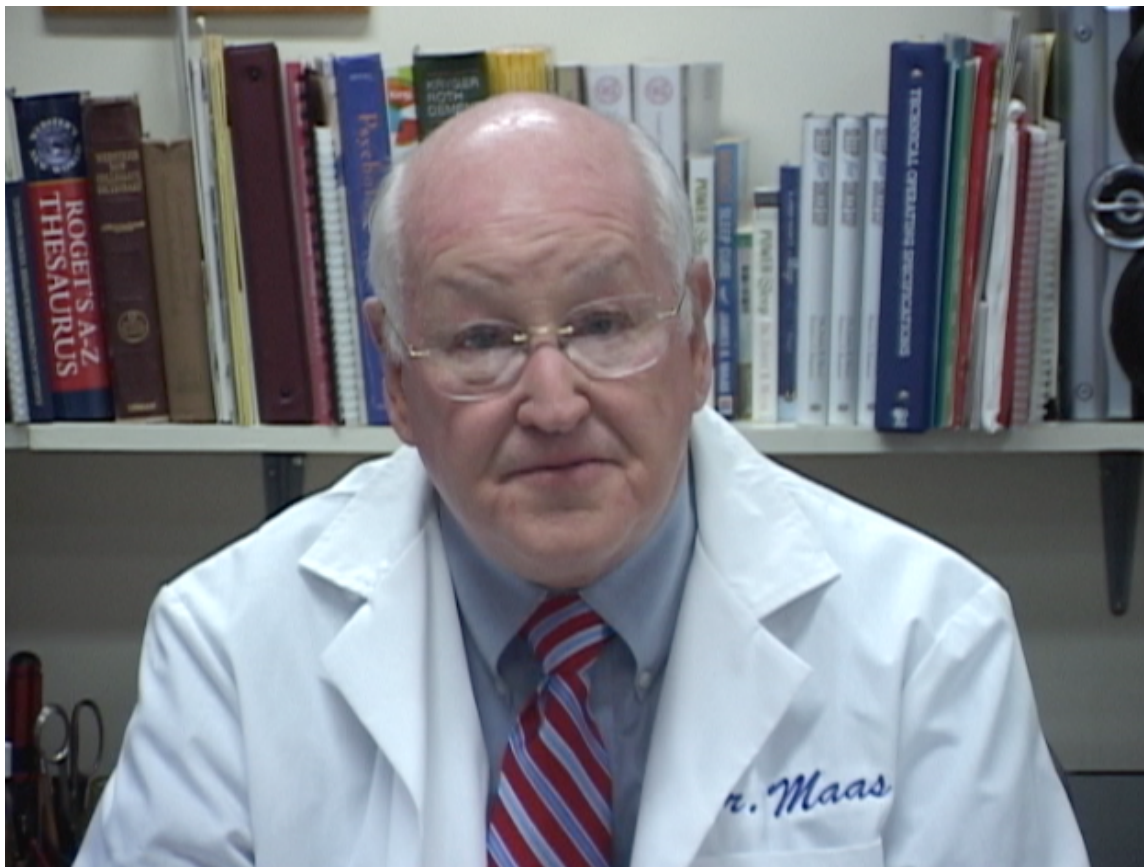
Please note the following important conditions of approval for this study:

APPENDIX 4: SLEEP VIDEO MESSAGE

Transcription of Sleep Video Message

What do you stand to lose by not getting enough sleep? You'll be drowsy, suffer from unintended sleep seizures, you'll be angry, irritable and distressed, you have a higher risk of obesity, and even cancer. Your athletic ability will suffer. How about your thinking? You'll have a reduced ability to remember and concentrate. Your critical and creative problem solving skills will be significantly reduced. You'll make poor decisions. In sum, your performance is going to suffer and your health is going to suffer. Are you willing to spend just one more hour asleep every night this week? By the end of the week, you will be amazed.

Screen Shot of Sleep Video Message



APPENDIX 5: CONFEDERATE-NATURAL CONVERSATION TRANSCRIPT

Confederate-Natural Conversation Transcript

Sleep Health Study User 15

Hi there

Sleep Health Study User 1

Hi!

Sleep Health Study User 15

Did you watch the sleep video too?

Sleep Health Study User 1

Haha. I was about to ask you that. Lol. Yeah, I did

Sleep Health Study User 15

It was with Dr. Maas. That's the psychologist from Cornell, right?

Sleep Health Study User 1

Yeah

Sleep Health Study User 15

The one who used to teach intro to psych?

Sleep Health Study User 1

One of my friends who graduated last year had a class with him

I'm not sure... Maybe?

Sleep Health Study User 1

When I have a lot of projects or assignments stacked on top of each other, it's hard to get enough sleep
but I still def try to get enough

You have prelims

Sleep Health Study User 15

I had one yesterday and I have one this next week

Sleep Health Study User 1

What's your major?

Sleep Health Study User 15

I'm Comm

What about you?

Sleep Health Study User 1

Oh, nice!

Sleep Health Study User 15

What assignments are you worried about?

Sleep Health Study User 1

Actually, it's for my Wines and Vines class

Sleep Health Study User 15

Cool

Sleep Health Study User 1

There's a "flexible assignment" (I'm still not quite sure what that means) and a quiz.

Yeah, we'll see.

Sleep Health Study User 15

Good Luck

Sleep Health Study User 1

Thanks!

APPENDIX 6: CONFEDERATE-NEGATIVE CONVERSATION TRANSCRIPT

Confederate-Negative Conversation Transcript

Sleep Health Study User 12

hey

Sleep Health Study User 1

Hello! Haha this actually worked...

I we as skeptical!

Sleep Health Study User 12

hhaha me too!

Sleep Health Study User 1

Sooo sleep haha

Honestly for me the video was not too persuasive

In college we are so busy and I love being with my friends... Who has time to sleep?

Sleep Health Study User 12

i agree

i believe more in 20 min power naps

Sleep Health Study User 1

Also, all those things he mentioned in the video were so long term I just can't get motivated to stop my work and go to bed when the effects MIGHT happen and only a long time from now

Oh I love naps!

I guess you could say I just don't really value sleep

Sleep Health Study User 12

It is hard to look at the long term when I might not do as well on my prelim the next day if i get more sleep the night before

Sleep Health Study User 1

Exactly

I feel like sleep - how much we get and all that - is just not really our choice in college

Don't get me wrong I would love to sleep in or get 8 hours every night but it's just not up to is

Us*

When our professors pile on so much work

But that's just my opinion

Sleep Health Study User 12

I do love to sleep late and i would probably sleep until 12pm every Sunday if i didnt have to wake up
and go to the library

the environment we are in just doesnt allow us to sleep for that long

Sleep Health Study User 1

Totally!!

I agree 100%

Anyway my next Hutton just came in

Sleep Health Study User 12

Nice talking to you!

Bye

APPENDIX 7: CONFEDERATE-POSITIVE CONVERSATION TRANSCRIPT

Confederate-Positive Conversation Transcript

Sleep Health Study User 15

Have you finished watching the video yet?

Sleep Health Study User 1

Just finished!

So we're supposed to talk about sleep right?

Sleep Health Study User 15

I think so

Sleep Health Study User 1

Haha

I love sleep!

I'm definitely one of those people who needs 8 hours at night

Sleep Health Study User 15

Same! I found the video interesting though

I find that I can function with even a few hours of sleep

Sleep Health Study User 1

Totally interesting, I liked how straight forward it was, just laying out the facts

Sleep Health Study User 15

But that I am most affected by the lack of sleep a day or two later

Sleep Health Study User 1

Most of the stuff I knew but some of the facts he provided were really interesting like the link between cancer and sleep!

Sleep Health Study User 15

Yes I agree

Sleep Health Study User 1

Definitely made me want to continue my current routine

Sleep Health Study User 15

I wonder how things like napping factor into what he was saying

Sleep Health Study User 1

True me too, because I love naps!

Sleep Health Study User 15

Yes! I don't nap often but I definitely would try to if I knew it was good for me

Sleep Health Study User 1

Sometimes I hear kids in class talking about staying up all night

And I wonder HOW they do it!

Sleep Health Study User 15

Yeah I can't do that

To me it's worth getting a good night sleep and getting up early

Sleep Health Study User 1

Me too, and after the video I'll definitely make sleep a priority

CHAPTER 5

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